

Q & A

For Understanding Environmental Accounting Guidelines

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Introduction

Question 01: What are the merits of introducing environmental accounting and reporting the results obtained?

Answer

The following are merits of introducing environmental accounting for both the company which implements environmental accounting and for the society at large.

(1) Merits for the Company

a. Merits from the Standpoint of Management (Internal Functions of Environmental Accounting)

The functions of environmental accounting which support corporate management are what are known as the internal functions of environmental accounting. By using the environmental accounting tool, companies can monitor factors such as environmental conservation cost, environmental conservation benefit, economic benefit associated with environmental conservation activities. Through the analysis of these factors, a company can realize the appropriate allocation of management resources to environmental conservation activities, thereby making efficient use of management resources.

Examples of how environmental accounting can be of assistance to internal management, is that it allows management to monitor account balances to reduce waste disposal cost and recycling expenditure, is to review account balances model for managing expenditures for environmental conservation projects and investment decisions, abets risk management to avoid lawsuits, becomes an integrated part of the environmental management system, and provides examples or models for use in environmental management of performance management. In addition, by reporting the results obtained from environmental accounting procedures, a company can achieve several goals such as heightening their employees' cost awareness and widely implanting a correct recognition of environmental issues, thereby has the benefit of deepening workers understanding of the company itself and increases an employee's perception of belonging to an environmentally conscious company.

b. Merit of External Reporting (External Functions of Environmental Accounting)

Through the reporting of its environmental accounting results, a company promotes environmental communication. By enhancing environmental communications, it is possible for a company to build trust with its external stakeholders. Through these efforts, a company becomes recognized as an environmentally conscious corporation and can differentiate from other companies within the same sector (industry). As a result, a company can see benefits in a diverse range of areas. For example, it can give a company the advantage in developing its sales strategies. The company can also become selected as a constituent in a "green" mutual fund. In this manner, it serves as a positive catalyst in building up a company's stock price. From the standpoint of employing personnel, owing to society's growing interest in environmentally conscious corporations, environmental reporting can work to a company's advantage.

(2) Merits to Society

The increase in the number of companies reporting on their environmental accounting can help to nurture stakeholders interested in environmentally conscious companies, contribute to the establishment of an environmentally conscious social system, and promote environmental conservation activities throughout the society at large.

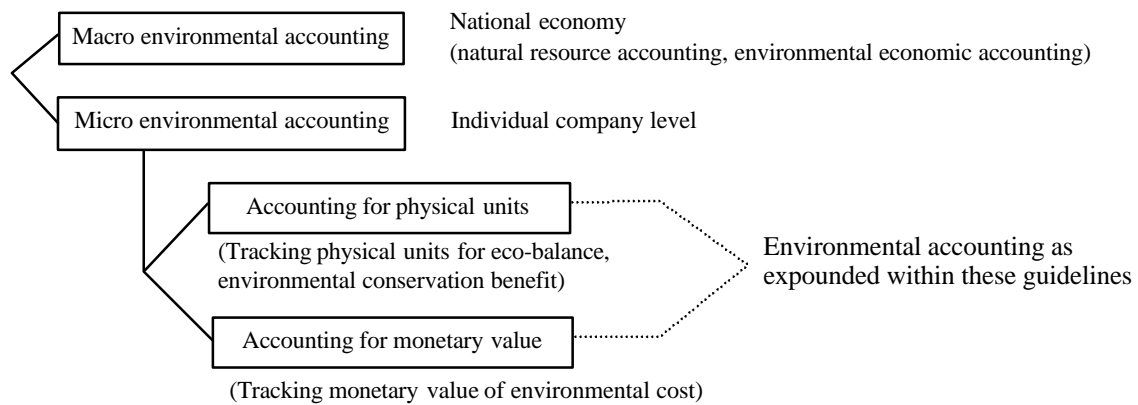
1. What is Environmental Accounting?

1.1 Definition

Question 02: Please discuss what types of concepts exist in environmental accounting.

Answer

There are a variety of concepts within environmental accounting. These guidelines cover environmental accounting as shown in the diagram below.



Environmental accounting within the context of these guidelines mainly targets companies and other organizations. It is the framework for integrating the accounting concepts of both physical units and monetary values, and addresses the issue of cost performance (cost versus benefit).

In addition, it consists of environmental resource accounting which attempts, as best as possible, to consistently and comprehensively record information on environmental pollution and natural resources using an accounting framework. Environmental accounting also encompasses eco-balance, in which a table of input and output data for environmental impacts is created to measure and report the amount.

Question 03: What should be done for environmental accounting data which can not be expressed in terms of physical units or monetary value?

Answer

Environmental accounting is mechanism for quantitatively analyzing environmental conservation activities. However, in addition, qualitative data, which has been deemed necessary, is incorporated into the results or quantitative data.

Under these guidelines, each constituent element of environmental accounting is measured using either monetary value or physical units. However for data which can not be described using physical or monetary units, it is possible to express it in qualitative terms.

The table below shows how each constituent element can be expressed as quantitative data or as qualitative data.

Constituent Elements	Quantitative Data	Qualitative Data
Environmental conservation cost	Monetary value	Details of activities
Environmental conservation benefit	Physical units	Details on benefit
Economic benefit associated with environmental conservation activities	Monetary value	Details on benefit

In environmental accounting, explanations of basic key items or the results obtained from accounting procedures are also categorized as qualitative data.

Question 04: Please explain the association between benefits in physical units and those expressed in monetary value.

Answer

Environmental conservation benefit is measured in physical units.

However, by assessing the economic value of environmental conservation benefit measured in physical units, the same data can then be expressed in monetary value as well. For example, this method can be used to assess the economic value of lower health risk resulting from a reduction in air pollutant emissions.

Meanwhile, economic benefit associated with environmental conservation activities is measured in monetary value. These benefits are reflected in profits a company records on its financial statements.

In this manner, both the assessment of the economic value of environmental conservation benefit and the economic benefit of environmental conservation activities are measured in monetary value but the essential content of these two elements differs. The former expresses the benefit to overall society in monetary terms, while the latter depicts the benefit to a company's business operations.

1.3 Basic Dimensions of Environmental Accounting

Question 05: To what degree should traceability be maintained to ensure verification of environmental accounting?

Answer

Verifiable data is information that is stored and can be verified by a third-party.

However, following the reporting of documentation containing environmental accounting data, it is not realistic to store data forever for the sake of verifiability. The storage period of such related documents should be stipulated within a company's in-house regulations, and the time period for disposal of such documents depending on their degree of importance. For example, if a company's latest environmental report contains data for a five-year period, then the minimum period to disposal should be five years. In regard to the storage of legal documentation of financial accounting records, under commercial business laws, minutes of the general shareholders meeting and financial statements are to be stored for 10 years and under corporate tax laws, ledgers and documents provided must be stored for 7 years.

1.4 Structural Elements of Environmental Accounting

Question 06: What is the relationship between environmental conservation activities and the constituent elements of environmental accounting?

Answer

The constituent elements of environmental accounting, which include environmental conservation cost, environmental conservation benefit and economic benefit associated with environmental conservation activities, and their relationship to environmental conservation activities are as follows:

(1) Incurring Environmental Conservation Cost

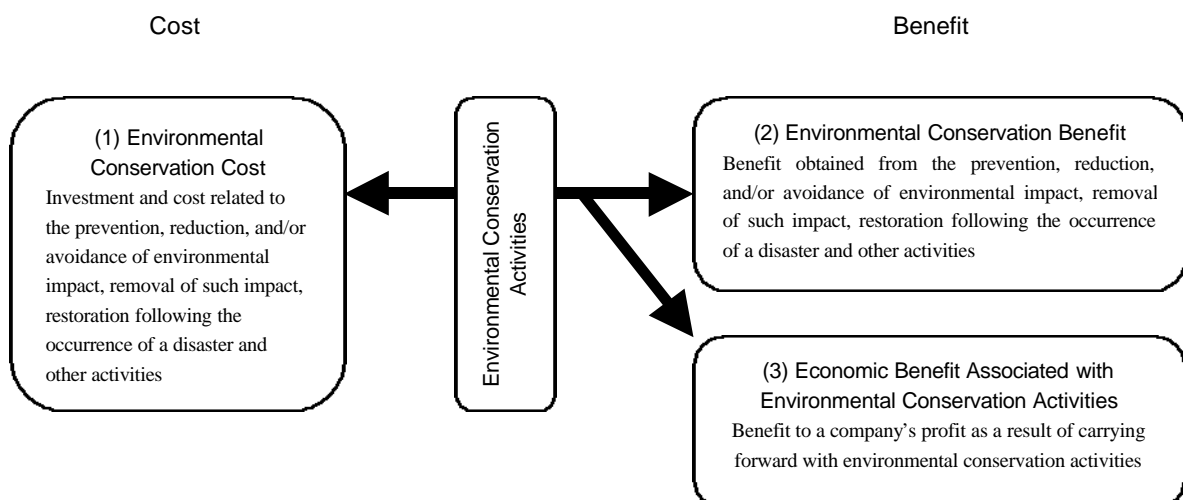
Environmental conservation cost is in consideration of the capital (goods or service) and human resources (labor) that a company uses to implement environmental conservation activities.

(2) Environmental Conservation Benefit Realized

Environmental conservation benefit is the improvement in environmental performance indicators as a result of progress made by implementing environmental conservation activities.

(3) Economic Benefit Associated with Environmental Conservation Activities Realized

Economic benefit associated with environmental conservation activities is the contribution to a company's economic profits as a result of progress made by implementing environmental conservation activities.



Conceptually, as a result of (1) incurring environmental conservation cost for the purpose of environmental conservation activities, a company realizes (2) environmental conservation benefit and (3) economic benefit associated with environmental conservation activities. However, the methods of calculation used during the course of everyday business activities are conducted in accordance with a company's environmental management system. Therefore procedure is not always the same as the process prescribed above.

Question 07: What are depreciable assets?

Answer

Depreciable assets are those material goods for which value is written off systematically in relation to the period of use or life of the property, thereby allocating the cost of the asset over its useful life. Depreciable assets include buildings, structures, machinery and equipment, ships, transport vehicles and equipment, fixtures and other tangible assets, but also include some intangible assets such as goodwill, patent rights and software.

However, some tangible and intangible assets are non-depreciable. This includes land, account for construction in progress (an open account for tangible assets under construction), and lease holdings.

Question 08: How should investments for non-depreciable assets be handled?

Answer

One example of an investment in a non-depreciable asset is the purchase of land to plant greenery. However, as the value of a non-depreciable asset is not written off over time, the advisability relative to cost, when it should be recorded and under what cost category, is unclear. As a result, within the context of these guidelines, environmental conservation cost does not include investment in non-depreciable assets.

Furthermore, as land is a natural asset, its acquisition is not considered a part of a company's environmental conservation activities.

Consequently, if an investment in a non-depreciable asset for the purpose of environmental conservation is of materiality, the company should develop some type of voluntary reporting method such as the use of explanatory notes. In this case, a company should report its outstanding asset balance compared to total investment made for the purpose of environmental conservation and disclose the change in investment amount owing to purchase, sales or transfer of the asset.

Question 09: How should investment in financial assets be handled?

Answer

Investment in financial assets could include such spending as the purchase of an eco-fund or participating in the capital of an environmental business. In most of these cases, the amount of the expenditure for the purpose of environmental conservation is significant, and promises to generate long-term benefit. However, these investments are not considered environmental conservation activities and as with non-depreciable assets, it is uncertain as to when they should be recorded as cost. In light of these factors, they are not included in environmental conservation cost.

Financial assets for the purpose of environmental conservation should be reported using explanatory notes when they are of materiality to environmental conservation. The explanatory notes should not just show the change in account balance or denote the name of the investment, but should also state the purpose of the investment and its benefit to illustrate that it is part of the company's environmental conservation activities.

Question 10: Are long-term prepaid expense and deferred assets included in the scope of investment?

Answer

Investments are those expenditures made during a target period for the purpose of environmental conservation, and those depreciable tangible and intangible assets, as defined by financial accounting standards, acquired during the current period. Prepaid expense and deferred assets are not covered under environmental accounting. The reason for this, is that consideration of these two factors has little significance to environmental accounting. Quite the opposite, taking these two items into account would only complicate procedures. However, in the event that expenditures related to long-term prepaid expense and deferred assets bear some particular materiality to a company's environmental activities, then they should be listed separately from investments normally covered under environmental accounting and should not interfere with normal reporting practices.

Question 11: Is depreciation equivalent to both investment and expense which have been categorized as environmental conservation cost?

Answer

These guidelines recognize investment and expense related to environmental conservation as environmental conservation cost. However, as both represent two different concepts, the total of these two figures does not equal total environmental conservation cost.

In the case of using a simplified total, depreciation on investment is double counted. For example, in the event of machinery investment for the purpose of environmental conservation, the acquired machinery is booked as a fixed asset on the company's balance sheet when also used for regular business purposes. At the same time, under environmental accounting, this is recorded as an investment for the purpose of environmental conservation. Meanwhile, this machinery is not just recorded onto the company's books in the year in which it was purchased. The value of the machinery is written off annually over its durable (usable) life. In other words, every year a depreciation expense is incurred and included in the company's profit/loss statement. In environmental accounting this depreciation is recognized as expense for the purpose of environmental conservation in environmental accounting. Therefore, the amount recorded as an investment will also be posted as an expense at a future date. This exemplifies the basic structure of environmental conservation cost.

These guidelines attempt to understand the relationship between environmental conservation cost and its related benefit (cost performance). To show the benefit for each fiscal year and the amount of cost required for achieving such benefit, expense for the purpose of environmental conservation is not the only data used. Investment, which is believed to realize some benefit in the future, is also calculated and reported.

Question 12: What is the concept behind social cost?

Answer

There are various academic definitions for describing the concept of social cost. In general, this term refers to the losses society suffers as a result of environmental impact caused by a particular company or an unspecified organization. For example, in a situation where a company's development activities lead to the extinction of some type of wildlife, while the company does not directly suffer any economic loss, the extinction of valuable wildlife is a loss for society. This is one example of social cost, in which a loss to society is measured in terms of economic value.

For economic value that is not directly reflected in market price (external benefit), the term external diseconomy is used to describe negative impacts or loss. One example of this is the emissions of environmental pollutants as a result of a company's production activities. In certain cases, some other economic entity (company or organization) aside from the company causing the pollution may be bearing the cost for refurbishing the environment or compensating environmental conservation cost. As these costs are born by a different party, they are not reflected in the product's market price, and therefore the negative impact is an external diseconomy. If regulations are fortified making the company legally responsible for cleaning up the pollutants it emits, then the company would incur cost related to the purchase and installation of facilities, such as purification devices. This cost would then be reflected in the product's market price. This is referred to as the internalization of external diseconomies.

2. Basic Environmental Accounting Elements

2.1 Significant Environmental Accounting Policies

Question 13: What kinds of accounting items are covered by environmental accounting guidelines?

Answer

Activities related to environmental impact or environmental conservation vary depending on the industry or business model. Certain companies will not be able to utilize the categories laid out under these guidelines as is. To facilitate this issue, different industries have developed their own proprietary guidelines. Some companies formulate their own guidelines to meet the particular conditions of their own business.

To understand the full extent of the activities being carried out by a company, it is best to reference these guidelines. However, when a company uses accounting methods not covered by these guidelines, the company should report on the background, concepts, characteristics and specific details of the accounting procedure to prevent any misunderstanding by its stakeholders.

Industry	Guidelines
Machinery Manufacturing	The Japan Machinery Federation “Report on the survey and research into the standardization of environmental accounting and environmental reports,” “Guidelines on environmental accounting and environmental reports for machinery manufacturing companies” (July 2001)
Construction	Three construction organizations mainly centering around the Japan Federation of Construction Contractors “Environmental accounting guidelines in the construction industry” (interim report)
Gas	The Japan Gas Association “Guidelines on the introduction of environmental accounting in city gas companies” (FY 2000 version)
Rubber	The Japan Rubber Manufacturers Association “Environmental accounting guidelines” (September 2000)
Petroleum	Petroleum Energy Center of Japan (PEC) “Report on the introduction of environmental accounting in the petroleum industry” (March 2000)
Food Processing/Manufacturing	Food Marketing Research and Information Center “First Step Guide: Environmental accounting manual for the food processing/manufacturing industry” (March 2001)
Other	Environmental accounting guidelines developed by individual companies

2.2 Target Period and Scope of Calculations

Question 14: What is the concept behind basing the scope of environmental accounting on a consolidated basis?

Answer

There are two methods for conducting environmental accounting on a consolidated basis. Environmental accounting can be done in accordance with financial accounting standards or depending on their degree of materiality to environmental conservation.

(1) Method Based on Financial Accounting Standards

<Statement No. 52 Auditing Standards Committee Report>

Treatment taking into account the materiality principle when performing environmental accounting on a consolidated basis or when applying the equity method.

(source: The Japanese Institute of Certified Public Accountants in accordance with March 24, 1999 revision)

1) Assets

$$\frac{\text{Total of all assets owned by non-consolidated subsidiaries}}{\text{Total of all assets recorded on the company's consolidated financial statements and total assets owned by its consolidated subsidiaries}}$$

2) Sales

$$\frac{\text{Total sales generated by non-consolidated subsidiaries}}{\text{Total sales recorded on the company's consolidated financial statements and the total sales generated by its consolidated subsidiaries}}$$

3) Profit

$$\frac{\text{Total net profit/loss of the current period generated by non-consolidated subsidiaries for which the equity-method is applied}}{\text{Total net income/loss recorded of the current period on the company's consolidated financial statements and the total net income/loss of the current period generated by consolidated subsidiaries for which the equity-method is applied}}$$

4) Retained earning

$$\frac{\text{Total retained earnings of non-consolidated subsidiaries for which the equity-method is applied}}{\text{Total retained earnings recorded on the company's consolidated financial statements and the total retained earnings by consolidated subsidiaries for which the equity-method is applied}}$$

(2) Environmental Accounting Based on the Degree of Materiality to Environmental Conservation

From the standpoint of maintaining a goal to preserve the global environment, a company can base the scope of its accounting on the degree of materiality to environmental conservation as opposed to be restricted to the concepts of financial accounting. Examples of such standards are the significance of environmental impact in terms of physical units or environmental conservation cost. Or it can measure the degree of quality related to such factors as the specific environmental impact.

Question 15: Please go over the practices for consolidated environmental accounting.

Answer

In regard to environmental accounting practices, much of it is likely to be influenced by daily business operations or R&D developments. However the following possibilities can be conceived.

(1) Accounting Method

There are two conceivable methods. One is to simply add up the totals while the other opts for adding totals based on ownership ratio. The former is a simple and convenient method. This is mainly how items measured in physical units are calculated. The latter is in principle for calculating monetary value. However, in certain cases it can also be applied to items or content that is measured in physical units.

(2) Eliminations for Internal Transactions

When implementing consolidated environmental accounting, to recognize the cost of carrying out environmental conservation activities and the benefit gained from those activities, it is necessary to eliminate its internal transactions.

Items measured in monetary value are eliminated in conformation with financial consolidated accounting standards. Items measured in physical units are also eliminated, such as those items which have clearly been double counted. For example, within a single corporate group, when the environmental conservation benefit from green purchasing, usage or disposal is recorded separately at each group company, they must then be eliminated on a consolidated basis.

Question 16: What is segment environmental accounting?

Answer

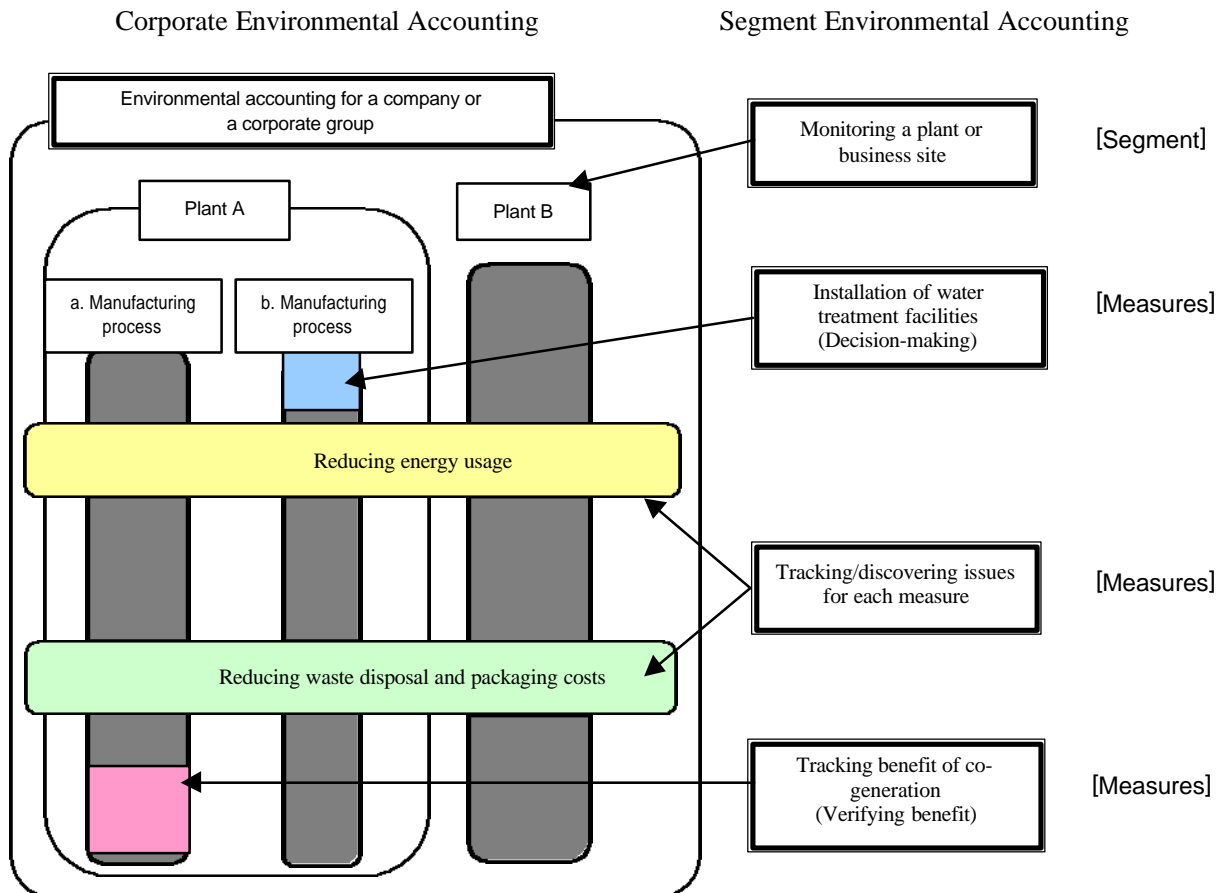
Segment environmental accounting is when the scope of environmental accounting is restricted to a single site, conducted for each business segment, for a specific business activity or project. Accounting for monitoring the corporate group as a whole is referred to as corporate environmental accounting.

The following diagram illustrates a model of the relationship between corporate environmental accounting and segment environmental accounting, when the scope only covers individual segments.

Segment environmental accounting is separated into two areas. 1) When the scope covers segments that represent plants or business sites. This corresponds with the area entitled [Segment]. 2) When the segment is a measure or project aimed at resolving a certain issue. This relates to the section marked [Measures].

Segment accounting analyzes and classifies accounts for each segment of the corporation. By doing this, the position of each segment becomes clear. It also aids in understanding corporate environmental accounting. Examples of this could be the examination of data on a diversified company's core competences, or information for key regions in which a multinational operates.

Structural Diagram on the Relationship between Corporate Environmental Accounting and Segment Environmental Accounting



3. Measuring Cost and Benefit

3.1 Environmental Conservation Cost

3.1.1 Content of Environmental Conservation Cost

Question 17: What are the standards for determining what can be recorded as an environmental conservation cost?

Answer

To determine whether a cost is an environmental conservation cost, there are standards for determining a cost objective (determining whether part of expenditure was used for the purpose of environmental conservation) and standards for determining the benefit obtained from cost (even though the purpose of the expenditure was not environment-oriented, was some type of environmental conservation benefit obtained as a result of this expenditure).

As benefit emerges consequential of environmental conservation activities, it is better from a theoretical standpoint to calculate cost required for environmental conservation activities first, using objective standards, rather than assuming benefit and then calculating the cost of environmental conservation activities necessary to receive such benefit. Tracking cost based on standards for benefit cannot be used effectively in management's decision-making. It is also complex from the point of practical accounting to extrude cost intentionally. In addition, a fair comparison cannot be made with companies who only use objective standards. In consideration of these factors, these guidelines mainly employ objective standards.

However, for those companies newly adopting environmental accounting, at the onset it may not be possible to account for necessary environmental conservation cost based only on objective standards, as the environmental accounting system itself might not be fully set up. For this reason, companies may inevitably calculate the expected benefit first and then calculate the cost believed necessary to achieve such a benefit.

Question 18: How are costs recognized?

Answer

The recognition of environmental conservation cost, in principle, is the same as under financial accounting standards. However, it may be difficult to match cost items completely with those used found in financial accounting. In this case, in environmental accounting relationship between cost and benefit is not a strict as the correlation between cost and revenues in financial accounting. As a result, cost recognition in environmental accounting is simple and convenient.

Firstly, the method for recognizing environmental conservation cost portion of an expense recorded in the company's financial statements, focuses on the point at which management has made a definite decision on a particular environmental conservation issue. In principle, the amount of the environmental conservation cost should match the cost recorded in the company's financial statements in accordance with financial accounting principles.

Next, the method for recognizing environmental cost at the time of an expenditure is incurred is relatively easy and focuses on the actual flow of capital.

(1) Cost of Sales and Inventory

Under financial accounting, some expenditures related to environmental conservation activities are included in the historical cost of inventory assets, such as unsold product.

For example, based on financial accounting standards, personnel costs at a plant or depreciation of facilities may not necessarily be recorded in a company's P&L statement during the current period. These expenses are initially converted into manufacturing cost and then appear on the company's P&L statement during the current period in the form of cost of sales. The portion that becomes inventory is recorded on the balance sheet at the end of the period as cost of inventory.

In the event that the outstanding balance of inventory does not fluctuate widely from the beginning of one to the end of the target period, these costs can be calculated based on manufacturing cost.

(2) Accrued Accounts (Prepaid Expense, Accrued Expense, Provisions)

For those products or services not yet received but for which money has already been paid, the company normally records a prepaid expense. Conversely, for those products and services already received, and for which a price has already been determined but not yet paid, a company records an accrued expense. Furthermore, companies build up provisions for future payments such as severance payment or refurbishment. These are future expenses the company will incur but for which an exact amount is unknown. The company should clearly report the method employed for recording these accrued accounts.

Question 19: How should repairs of facilities or equipment be handled?

Answer

Under these guidelines the scope of environmental conservation is widely defined. Accounting practices for repairs to facilities and other assets should be determined by the company.

(1) In the Event That Capital Expenditure Applies

This is determined by seeing if the additional functions correspond with the environmental conservation objectives. Some costs could be included in environmental conservation cost if they are in the form of additional investment to improve the energy efficiency of existing facilities or if the expense is for taking used machinery, once industrial waste, and revitalizing it into environmentally conscious equipment.

(2) Repair Cost

This cost is used for maintenance of environmental conservation facilities. They are categorized as environmental conservation cost, the same as when the original capital investment was made. Examples of repair cost include expense for daily maintenance of environmental conservation facilities or regularly conducted special repairs to maintain operations of a specific function. However, repair cost for the maintenance of facilities that are not used or related to environmental conservation are not categorized as environmental conservation cost.

3.1.2 Environmental Conservation Cost Categories

Question 20: What are the environmental conservation cost categories?

Answer

Within these guidelines, we focus upon environmental conservation cost categories depending on their relationship to specific business activity.

For the purpose of environmental accounting, business activities are divided into four categories, production and service activities, administration activities, R&D activities, and social activities. In the category of production and service activities, focus is placed on whether the environmental impact the company is trying to control occurs directly in the business area or if it occurs upstream or downstream. Furthermore, one cost that does not fall within the framework of these four business activity categories is environmental remediation cost.

Other environmental conservation cost which does not fit into the aforementioned categories is recorded as other cost. To maintain a clear scope, the content, target and the reason behind the cost categories should be disclosed.

Relation to Business Activities	Environmental Conservation Cost Categories
Product and service activities	Business area cost
	Upstream/downstream cost
Administration activities	Administration cost
R&D activities	R&D cost
Social activities	Social activity cost
(outside the above four business activities)	Environmental remediation cost

Activities related to environmental conservation and those related to controlling environmental impact vary depending on industry and business model. In certain cases, the categories set forth in these guidelines may not be pertinent to all types of businesses. Should this be the case, the concepts and categories imparted herein should be used as a reference and a company should employ categories that suit the conditions of its business operations and activities to control environmental impact. However, when doing so, an explanation of each characteristic should be given, as well as a description of its relationship with each general category. An effort should be made to ensure that comparisons with other companies could be made.

Question 21: What is the business area?

Answer

The business area is the area in which impact on the environment can be directly managed. However, in the case of affiliate manufacturing plants, if the company ships the plants supplies, designates manufacturing methods and implements the out-right purchase of all product manufactured by the plant then for all intents and purposes the company manages the affiliates environmental impact. Therefore the affiliate is included in the business area.

Question 22: How does the transport of goods fall under environmental conservation cost?

Answer

Transports take place during various phases of business operations. This includes the transport of purchased goods, procurement of raw materials, transport of materials within a business site or between business sites, shipment of goods and transport of waste. When the company conducts transports on its own, the company can manage the control of environmental impact and therefore this becomes a business area cost. Meanwhile, when the transports are being handled by an outside party, cost categories depend on the type of transport. For example, if a transport company's freight charges are high because a large number of the transport vehicles it uses are low-pollution trucks, then the company can record this cost as an upstream/downstream cost. In other words, this is viewed as green purchasing. However, if the company consigns transports to another party, closes an agreement requiring the transport company to use low-pollution vehicles, and designates roundabout routes as a part of its nature conservation measures, then the consigned party can be said to be directly under the management of the company. In this case the related transport cost is booked as a business area cost.

In the event that the environmental conservation cost represents only a small portion of the total transport cost, or if it is difficult to categorize, the company must determine what part of the cost is important and post it as a business area cost or upstream/downstream cost. If the major portion of the transport cost is related to R&D activities then the cost should be recorded as an environmental conservation cost associated with R&D activities.

(1) Business Area Cost

Question 23: What is cleaner production?

Answer

Technology to treat air and water pollutants and waste refers to the use of preventive measures to stop pollution at the point where pollution is discharged. This know-how is called end-of-pipe technology. Cleaner production is a method that goes one step further than conventional end-of-pipe modes. This approach, based on the concept of reducing environmental impact over the entire product life cycle, begins from the extracting of raw materials, and goes all the way to product disposal and recycling. It not only includes traditional technologies (hard technologies) but also management technologies (soft technologies).

Examples of cleaner production activities include cost reduction through energy and labor conservation, lower outflow or loss of environmental pollutants via the enhancement of productivity and improvement to the overall production process.

Question 24: How should costs related to implementation of the Kyoto mechanism be treated?

Answer

The cost to implement activities for reducing the greenhouse gas emissions is an environmental conservation cost. Even in the case of CDM (clean development mechanism) or JI (joint implementation), it is believed that a fair amount of environmental conservation cost is incurred. However, while the emissions trading helps to reduce the company's cost to conduct environmental conservation activities overall, it does not help to decrease greenhouse gas emissions. From this standpoint, this cost is not included as a part of environmental conservation cost.

It should be noted that a review of these concepts would be necessary following the introduction of the Kyoto mechanism.

Question 25: What is the relationship between pollution prevention cost and the seven types of pollution that are recognized traditionally?

Answer

Items listed as pollution prevention cost as those related to the seven traditional pollution defined in the Basic Environment Law. Cost of this category includes expense incurred for pollution prevention as stipulated under laws and regulations.

For example, wastewater treatment cost is a pollution prevention cost if its main purpose is to prevent water pollution. If the goal is to recycle water, then it is a resource recycling cost. In the same manner, the categories of waste disposal cost as an environmental conservation cost is based on the chief objective of the waste disposal activities. If the purpose is simply to prevent the leak or outflow of hazardous substances then the cost is a pollution prevention cost. However, if the goal is recycling then the cost should be classified as a resource recycling cost.

Question 26: What is compliance cost?

Answer

Compliance cost is the cost of activities carried out to maintain environmental impacts at a certain level. The environmental conservation benefit of these environmental conservation activities are difficult to measure quantitatively.

Compliance cost is not only pollution prevention cost but also includes cost to continuously maintain environmental impact below regulatory levels or standards and maintenance cost to uphold zero emissions at plants.

Question 27: When should environmental conservation cost be recognized after the discovery of ground contamination?

Answer

Valuation loss on land as a result of neglect to perform ground contamination prevention measures is not an environmental conservation cost. Cost to conduct measures to prevent ground contamination is recognized as expense to restore the natural environment.

Question 28: What types of measures fall under the category of environmental remediation cost?

Answer

Environmental remediation cost is expense incurred owing to the removal of an environmental impact. However, some environmental impacts are not serious enough to require some type of remedial action, such as noise that is below environmental standards. In this case, conducting environmental activities to improve the level of noise prevention would be considered a preventive measure and therefore this expense would be a pollution prevention cost.

Meanwhile, losses (including projected losses) in the form of expenditure for corrective measures to deal with environmental degradation are categorized as environmental remediation cost. Examples of this type of cost include expenses arising on account of noncompliance with environmental regulations, from measures for the newly established law such as the ground contamination law, and expenses arising from being subject to legal action, such as an air pollution case, despite having complied with various environmental regulations.

Question 29: What is the relation between ISO 14001 pollution prevention and environmental accounting?

Answer

As long as the goals are the same, the environmental conservation activities outlined in these guidelines include the pollution prevention activities defined by the ISO 14001.

Pollution prevention is defined as follows:

“3.13 Prevention of pollution

Use of processes, practices, materials or products that avoid, reduce or control pollution, which may include recycling, treatment, process changes, control mechanisms, efficient use of resources and material substitution.” (Japanese Standards Association JIS Q 14001)

Question 30: From the standpoint of occupational health and safety, can environmental cost related to the prevention of noise and vibration also be included in pollution prevention cost?

Answer

Noise and vibration are a type of pollution. Expenditure incurred to prevent this type of pollution is a pollution prevention cost. However, as damage resulting from noise and vibration usually centers around the business site and its surrounding areas, this is a key management item for occupational health and safety, and environmental measures within the business area. Therefore, from the standpoint of occupational health and safety, these are not considered as environmental conservation cost.

In daily business practice, cost is determined by objective standards for each activity. Measures for internal business operations are generally regarded from the standpoint of occupational health and society.

Question 31: How is the cost of thermal recycling treated?

Answer

Thermal recycling is the recovery of heat energy during the incineration of waste. Cost for the recycling of waste is mainly for reuse or recycling in the case of material recycling. Therefore, the cost of thermal recycling is treated as a waste disposal cost.

Question 32: How is waste disposal cost handled?

Answer

In principle, waste disposal cost is the portion of resource recycling cost that accounts for the cost of disposing of waste. For example, the waste disposal cost for removing old facilities to install new facilities.

The cost of disposing waste generated from the maintenance of facilities is categorized based on the purpose the said facilities (pollution prevention cost, R&D cost or administration cost). An example is the cost of disposing tree trimmings from the greenery planted around the factory. In this case, it may be difficult to determine the cost category and therefore it can be included in administration cost.

Question 33: As the characteristic of waste disposal cost differs from that of other environmental conservation cost, is there some way to separate it?

Answer

Resource recycling cost is expense for recycling resources. The goal is to control waste emissions so that they continuously meet a certain standard. Waste disposal cost is the cost of properly disposing of waste. This does not directly aid in controlling waste emissions. Furthermore, the landfill waste can be reduced through the use of suitable intermediate processing to reduce the total waste emissions for final disposal.

Cost can be categorized by focusing on the differences in attributes, and an independent resource recycling cost category can be made to classify and describe this cost or an explanatory footnote can be used.

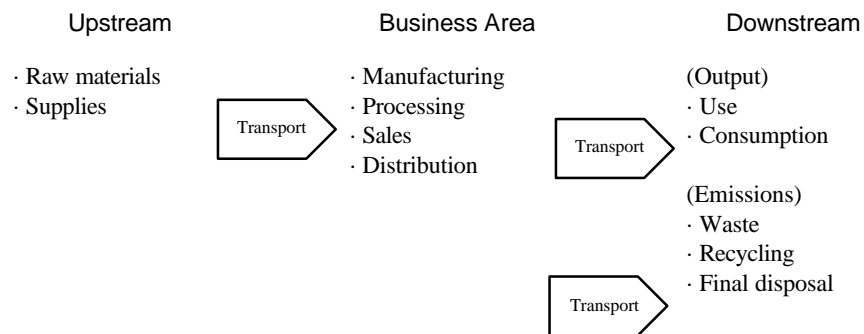
This does not only apply to waste disposal cost, a company should footnote items it determines need to be separately addressed owing to certain business features.

(2) Upstream/Downstream Cost

Question 34: What are upstream and downstream cost?

Answer

The business area is defined as the region for which environmental impact can be directly managed during the flow of goods and services. The upstream area is the area prior to the input of goods and services. The downstream area is the area after the production or output of goods and services. Therefore, activities related directly to input and output are the business area. Conventionally, subcontractors and affiliate plants are viewed as independent economic entities and correspond to the upstream and downstream areas. However, depending on the business model being used, they can also be conceived to be part of the business area.



Question 35: How should cost be handled when materials procured through green purchasing are less expensive than conventional materials?

Answer

When environmentally conscious materials/parts are procured at a lower price than conventional materials/parts, this indicates that environmental conservation activities have become a fully integrated part of the company's goods or services. In this case, only a portion of the cost is recorded as an environmental conservation cost.

However, in the case that environmentally conscious materials/parts are lower in price than their conventional counterparts but the benefit obtained is not fully integrated into the company's goods or services, the cost is booked as economic benefit associated with environmental conservation activities. One example of this is the procurement of environmentally conscious parts that are designed in accordance with a company's proprietary specifications. In this case, the cost is posted as an economic benefit associated with environmental conservation activities.

Question 36: How should the contributions to industry association be handled?

Answer

Companies make contributions to various industrial associations for their environmental conservation activities. This includes those paid to The Japan Containers and Packaging Recycling Association for the recycling of packaging back into usable product, contributions to the Compact Rechargeable Battery Recycling Promotion Center in correspondence with its sales volume and for the collection and recycling of compact rechargeable batteries, and association fees which also correspond with a company's sales volume. These associations handle certain environmental conservation measures on behalf of the company. This cost is downstream cost.

Contributions to the Center for the Promotion of Proper Waste Treatment's postliminary fund are used for the proper disposal of waste which has been illegally dumped. These contributions are categorized as environmental remediation cost.

The pollutant levy paid to the Pollution-Related Health Damage Compensation and Prevention Association corresponds with a company's emissions of pollutants is categorized as a pollution prevention cost. This fund operates a health damage prevention business (businesses to improve the environment focusing on the air) to prevent the damage of the health of local residents.

(3) Administration Cost

Question 37: What is the relationship between administration cost and social activity cost for providing information?

Answer

Information provided to local residents as a part of a company's social activities contains data on the company's activities but also information that is not directly linked to the company. For example, this includes local seminars to enlighten residents on the environmental impact of hazardous substances handled by the company.

Meanwhile, the cost of holding local seminars and company environmental conferences to fulfill corporate responsibility to the community is an administration cost, as these activities aim to build communication with the community as a part of the company's sales activities.

Question 38: How is cost for maintaining and operating the environmental management system handled?

Answer

In conducting voluntary environmental conservation activities, a company establishes its own environmental policies and goals. The system and procedures developed to go about this is known as an environmental management system.

Typical environmental management systems include the ISO 14001 and the environmental activities assessment program. Cost related to the establishment and operation of an environmental management system consists of the cost of acquiring ISO 14001 certification, preparation cost, and personnel cost that is directly related to maintenance or improvement work. However, cost that is a part of normal business activities, such as that related to pollution prevention activities, is categorized based on its individual cost objective.

In the event that ordinances issued by a local municipality or other authoritative body require a company to develop plans related to waste reduction or the prevention of global warming, this cost can be considered to be related to environmental management system cost.

Question 39: How should cost for an environmental audit be treated?

Answer

An environmental audit is an objective check of a company's environmental management activities.

The cost for acquisition and audit of ISO 14001 and other environmental management systems is recorded along with the cost for establishing and operating an environmental management system. Cost for a third-party review of an environmental report is included in the cost for disclosing environmental information.

Question 40: How should the cost for environmental impact monitoring?

Answer

Costs for monitoring and measurement consist of costs for monitoring the air, water quality and noise, and tracking the release and transfer of chemical substances (PRTR). This cost is recorded as an administration cost.

Meanwhile, cost related to the implementation of normal business operations such as production management and sales management is booked as business area cost or upstream/downstream cost. For example, cost for regular patrols of water systems and rivers for the prevention of water pollution or the cost for inspecting piping to prevent ground contamination are incurred on a daily basis in line with everyday operations to prevent pollution. These costs can be included in pollution prevention cost, as there is not particular need to record them separately.

Question 41: What is included in the environmental education for employees?

Answer

Environmental education for employees also consists of training programs for related parties such as subcontractors or suppliers. The term employees do not only refer to the company's employees but includes workers in the entire corporate group.

(4) R&D Cost

Question 42: How is R&D cost calculated and reported?
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Answer

For R&D cost which is closely related to a company's business strategy, there are individual standards for handling this cost established under financial accounting practices.

Under financial accounting standards, the definition of research and development is clearly laid out. In the beginning, it is uncertain whether R&D will actually produce revenue in the future. For this reason, R&D, when initially incurred, is not recorded as an asset, but rather as an expense. For example, if R&D is carried out for a specific purpose and the particular technology can not be used in other machinery or if a patent is taken out, the cost of the R&D is recorded as an expense and categorized as environmental conservation cost.

In contrast, capital investment for the purpose of R&D, and which will serve a variety of purposes, is recorded as a fixed asset and is not considered an environmental conservation cost.

Consequently, under financial accounting, the majority of R&D costs are handled as an expense as opposed to a fixed asset. Reflecting this, R&D cost under environmental accounting is recorded as an expense and not an investment in most cases.

Question 43: What are some points to watch out for regarding R&D cost?

Answer

For R&D cost, while it is possible to classify R&D by theme when related to the environment, it is difficult to accurately pinpoint cost. The purpose of product development focuses on the development of environmental technologies with the aim of increasing sales as opposed to conserving the environment. Basic research itself generally contains elements aimed at creating environmentally conscious products. But because it is difficult to ascertain the extent to which these activities focus on analytical technology and development related to the environment, it is not easy to decide if these are actually environmental conservation cost.

In addition, once R&D cost is determined to be environmental conservation cost, there are other factors which must be considered. Difficulties such as estimating the timeframe of research for environmental impact reduction and proportionally dividing cost related to the manufacturing of a prototype. Therefore attention must be given to how to handle complex cost.

Because of this, there are companies which establish an allocation ratio of R&D cost which it recognizes as environmental conservation cost. For example, some companies use an allocation ratio of 50%. Others use standards based on R&D items as determined by head researchers or individual departments to proportionally divide up cost.

(5) Social Activity Cost

Question 44: What are the focal points of social activity cost?

Answer

Social activity cost is the environmental conservation cost used to widely make contributions to society. This cost is not recorded as a part of ordinary business activity cost.

Industrial afforestation overseas carried out by a paper company as a part of its business activities or nature conservation activities which constitute a part of a company's business are not social activity cost. These activities can be considered to be environmental business. Refer to Question 89 on how to apply environmental accounting to environmental business.

Question 45: Why are nature conservation cost and the cost for the planting of greenery divided into administration cost and social activity cost?

Answer

Cost for environmental improvement actions such as nature conservation, planting of greenery, beautification, and maintenance of the landscape is categorized depending on whether the activity is conducted within the business area or in the region surrounding the business area. This is not an intentional effort to strictly outline management based on area but classification based on the actual scope of business activities.

Consequently, those items falling within the scope of actual business activities are administration cost. Those items not directly related to the scope of business activities are social activity cost. For example, the planting of greenery on a voluntary basis to prevent desertification is a social activity cost. The planting of trees on company property is a social activity cost if it offers a sense of freedom or relaxation to the surrounding community, though the planting was done on company land.

(6) Environmental Remediation Cost

Question 46: How are provisions for environmental remediation?

Answer

It should be noted that allocations to provisions for environmental remediation does not directly contribute to environmental conservation. The balance of provisions and changes in the outstanding balance should be reported. The relation with environmental conservation cost and the handling of provisions is as follows:

Accounting Event	Financial Accounting	Environmental Accounting
1) Allocation to provisions for environmental remediation	Allocation to provisions / provisions 100 100	Environmental remediation cost 100
2)-1 Expenditure incurred due to environmental remediation	Environmental remediation cost/cash 120 120 Draw down provisions / provisions 100 100	Environmental remediation cost 20
2)-2 Expenditure incurred due to environmental remediation	Environmental remediation cost /cash 80 80 Draw down provisions / provisions 100 100	Environmental remediation cost – When provisions were built up in excess (surplus of provisions), the excess amount should be reported

(Ref.)

Under financial accounting, the conditions under which provisions can be established are defined as “the expectation of a specific future expense or loss, the event occurs prior to the current period, high possibility of such an expense or loss, and when the amount of the expense or loss can be pragmatically estimated.”

Question 47: Under environmental accounting, can cost be offset with the insurance received for environmental remediation?

Answer

Insurance claims paid for environmental remediation do not directly contribute to the reduction of environmental impact and the receipt of an insurance claim itself is not covered by environmental accounting.

If an insurance claim is paid to the company, it means that some type of serious environmental degradation has taken place. For this reason, remediation cost is incurred. If the remediation cost exceeds the amount of the money received from the insurance claim, this excess amount is recognized as an environmental conservation cost.

A return paid on a matured insurance policy is not also covered under environmental accounting.

Accounting Event	Financial Accounting	Environmental Accounting
1) Insurance premiums paid for environmental remediation	Insurance premium payment/ cash 100 / 100	Environmental remediation cost 100
2) Occurrence of environmental degradation	–	–
3) Payment on insurance claim	Cash /payment on insurance claim 2,000 / 2,000	–
4)-1 Incur cost to refurbish natural environment	Cost to refurbish natural environment/cash 1,500 / 1,500	–
4)-2 Incur cost to refurbish natural environment	Cost to refurbish natural environment/cash 2,500 / 2,500	Environmental remediation cost 500

3.1.3 Methods for Aggregated Environmental Conservation Cost

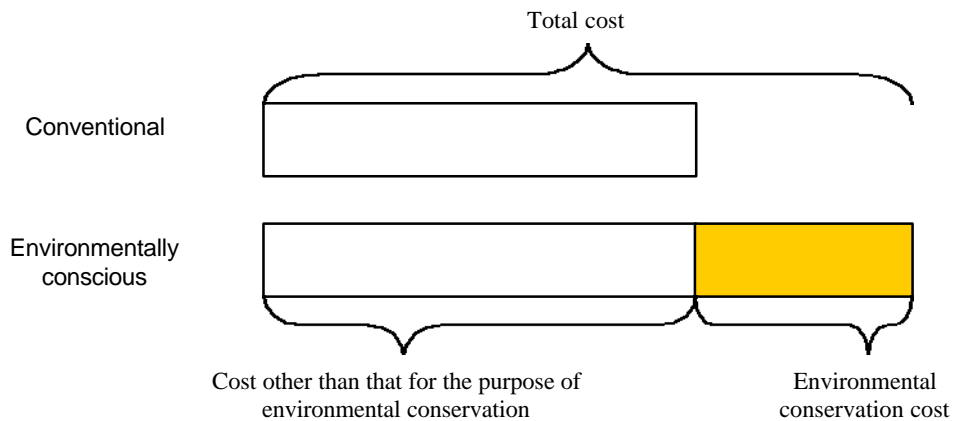
Question 48: How is complex cost calculated?

Answer

(1) Calculating the Difference (Conventional Items vs. Environmentally Conscious Items)

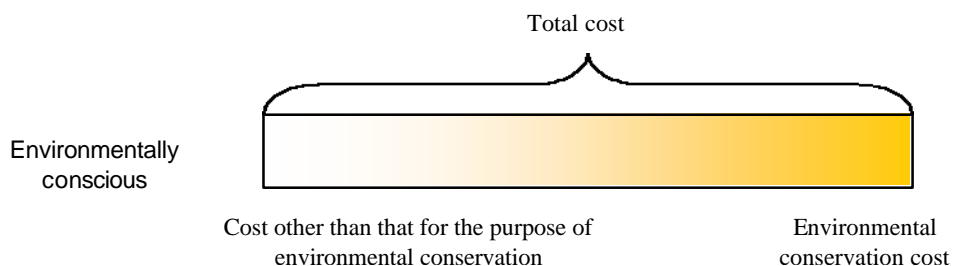
The first method to be applied, in the event of complex cost, is to exclude all cost that is not either environmental conservation cost or for the purpose of environmental conservation. This method can be applied when a low-pollution, hybrid company vehicle is purchased as a part of green purchasing activities, or when production facilities come with additional environmental conservation function options, such as resource conservation function or hazardous substance removal function.

The standard price, when environmental functions have not been added, is subtracted from the price after environmental functions have been added.



(2) Dividing Cost Proportionally

The price of some goods and services is not clearly defined making it difficult to calculate the difference between conventional items and environmentally conscious items. In this case, the following method is used to proportionally divide cost.



First a logical standard is established and the cost is divided up. To determine a logical standard, a comprehensive outlook must be taken. Factors to be taken into consideration include the content of the environmental conservation activity, environmental conservation cost category, and the type of environmental impact for which environmental conservation benefit is expected. Standards must not only be directly proportional but also include criteria based on a set correlation.

Next, establish a simple standard for dividing cost. Divide the cost based on this standard.

Simple standards should be established based on the assumption of a set correlation. Explain the standards used and the premises used to derive the standards.

Question 49: How is personnel cost treated under environmental conservation cost?

Answer

(1) Basic Concept

In calculating personnel cost, when this cost is exclusively for environmental conservation activities, total personnel cost is recognized as environmental conservation cost. If the personnel cost is used to conduct other business activities in addition to environmental conservation activities, or when the environmental conservation activities covers more than one area, the personnel cost must be divided up proportionally.

(2) Method for Proportionally Dividing Personnel Cost

As a part of environmental conservation cost, personnel cost can be derived by multiplying workload by a unit price for personnel cost. Regarding the workload, the amount relating to environmental conservation activities can be calculated, or can be calculated based on an allocated number of labor hours over a set period of time.

Workload can be calculated based on the number of days or hours. A unit cost for personnel cost can be derived by dividing the total annual personnel cost by the total days or hours of labor per year.

If there is some difficulty in calculating time, then a simpler method can be applied where a set ratio is employed. In this case, it is best to use a ratio which corresponds with the content of its environmental conservation activities. Also to simple calculations, a unit cost for personnel cost is based on the average for each position not for each employee can be used or an average unit for each department can be employed.

The methods of calculation or proportional division employed should be reported.

Question 50: How are subsidies for environmental conservation activities handled?

Answer

Normal subsidies are granted to mitigate environmental conservation cost. Those subsidies received in conjunction with the acquisition of environmental facilities can be considered an environmental conservation cost and can be used to offset the acquisition cost of the facilities. However, as environmental conservation cost is categorized based on objective standards under the scheme of financial accounting therefore it is logical to write-off the subsidy in its corporate accounts. Consequently, if the acquisition cost is directly offset with the subsidy as described above then the two figures also offset each other in environmental accounting. But most companies show subsidies as profit on their books, and use double-entry accounting. In this case, under environmental accounting the subsidy is recorded as an economic benefit associated with environmental conservation activities.

Subsidies can be considered to be similar to tax exemptions. Unless they are of particular importance, they can be omitted.

Question 51: Does shortening the depreciation period affect environmental accounting?

Answer

(1) When the Depreciation Period is Shortened under the Financial Accounting Scheme

Even if the depreciation period is shortened in accordance with a change in the product's useful life under tax laws, this typically does not have any connection with environmental conservation activities. However, as environmental conservation cost is equivalent to the amount of expense reported under financial accounting, a shortened depreciation period will result in a higher environmental conservation cost.

(2) Establishing a Unique Depreciation Period

Change in the depreciation period, details, reasons for the change and impact to environmental conservation cost should be reported under the basic key items.

In this case, a review should be carried out for the period in which the benefit appears.

3.2 Environmental Conservation Benefit

3.2.1 Categories of Environmental Conservation Benefit

Question 52: What are key points to note in dealing with environmental conservation cost and environmental conservation benefit?

Answer

Comparison of both environmental conservation cost and environmental conservation benefit is not easy.

(1) Diversity of Environmental Impacts as Key Consideration

The cause and result between environmental conservation cost and environmental conservation benefit is complex. When achieving one type of environmental conservation benefit, it is possible that at the same time other types of environmental impact are increasing. For example, a company might select an alternative air conditioning gas in an effort to stop the ozone depletion but in return start emitting some type of greenhouse gas. Or, a company might introduce new facilities to contribute to energy conservation, but the consequence is that the end-of-life facility becomes waste.

In light of this, a company must select environmental conservation benefit indicators to be able to more comprehensively look at environmental impacts.

(2) Past Environmental Conservation Activities Must Be Given Consideration

Environmental conservation benefit is calculated by computing the difference between the amounts of environmental impact in the base and the current periods. As progress is made in environmental conservation activities, additional environmental conservation cost of the same amount must be spent to maintain a continued decrease in impact. Because of this, those companies making great strides in environmental conservation find it more difficult year-by-year to generate benefit.

As a result, in assessing its environmental conservation activities, a company must take into consideration past environmental conservation activities to understand the level of its current activities, not make a comparison of cost to benefit for the target period.

(3) Calculating Benefit Corresponding to Environmental Conservation Cost

To get a precise grasp of the benefit from environmental conservation cost, a company would have to calculate the difference between environmental impact for the current period assuming it did not carry out any environmental conservation activities and the actual amount of environmental impact for the same period factoring in benefit from its environmental conservation activities. However, there is not one set formula followed by all companies for computing the amount of environmental impact had no environmental conservation activities been carried out.

Reflecting this, these guidelines propose two methods for calculating environmental conservation benefit. Method 1 is a simple comparison with the base period. Method 2 makes a comparison with the base period after making adjustments for the volume of business activity.

The results obtained from Method 1 show the results of benefit gained from environmental conservation cost but also include the impact from the change in business activity volume, therefore the results do not accurately correspond with environmental conservation cost. The results from Method 2 show the environmental conservation benefit as if the volume of business activity did not change. Basically the results derived using this method properly reflect the benefit gained from environmental conservation cost. Refer to Questions 68 and 69 for details on the results obtained from using Methods 1 and 2 and their relationship to the benefits gained from environmental conservation cost.

Question 53: From the aspect of corporate management, what method can we adopt to valuate benefits relative to cost?

Answer

There is a method for totaling costs, investment and environmental conservation benefits by types of environmental conservation activity. For example, a distributor can use the model below. The typical items concerned with environmental conservation activities can be valuated according to practical activities. Refer to “Environmental Accounting Guidebook II” (March 2001) for further information.

*URL (<http://www.env.go.jp/policy/kaikei/guide02/index.html>)

Environmental Conservation Activities	Quantifiable Benefits		Comparable Costs	Description and Information	Evaluation and Confirmation
	(Physical Unit)	(Monetary Value)			
Storefront collection for recycling					
Promotion of use of personal bags					
Reduction of distribution of free plastic bags					
Optional handling of disposable chopsticks					
Use of environment-friendly bags (improvement of the materials of plastic bags)					

Question 54: Please explain the relationship between the classification and category of environmental conservation benefits.

Answer

Environmental conservation benefits are systematized from two standpoints. The system which corresponds to the classification of environmental conservation costs, from the standpoint of valuation of benefits relative to cost, is defined as “category.” The system which is associated with business activities is defined as “classification.”

From the aspect of internal management, category corresponding to environmental conservation costs is necessary for decision making. External stakeholders can use this useful category as information about the benefit of a company’s environmental conservation activities and predictions regarding future prospects of environmental impacts.

However, because of the variety of environmental conservation activities, it is often difficult to match all of them with the cost category. In this case, classification according to business activities is more effective. For example, when stakeholders attempt to valuate the benefit of energy conservation projects, they can understand information about their companywide benefit more easily than the results of strict measurement of those parts corresponding to business area cost, or R&D cost.

In Disclosure Format B and C, the sections of environmental conservation benefits have a category corresponding to environmental conservation costs and a classification according to business activities. When we value environmental conservation benefits, we may find it difficult to extract those parts corresponding to individual items related to environmental conservation costs. In this case, we can use the following methods.

- Recording only the demonstrated correlation or selecting the costs that may be incurred in certain projects (and the resulting benefits) and recording them
- Correlating the total environmental conservation costs with the total environmental conservation benefits

In the latter case, the sections of the environmental conservation benefits of Disclosure Format B and C are to be filled by following only the business associated classification of environmental conservation benefits. The category corresponding to environmental conservation costs is not to be used.

Question 55: Aren't environmental impacts reduced through green purchasing in the business area as well as upstream area?

Answer

Although the expense incurred in green purchasing is regarded as an upstream cost, the benefits resulting from the purchased goods are occasionally recognized in the business area. For example, the additional expenses incurred in the purchase of energy saving personal computers are regarded as upstream costs. The reduction of energy consumption, however, is actually recognized as a benefit in the business area.

3.2.2 Expressing Environmental Conservation Benefit

Question 56: What is the environmental performance indicator?

Answer

Environmental performance indicators are used to express the environmental impacts caused by business activity or the results of countermeasures to improve such impacts. For further information, refer to the guidelines entitled “FY 2000 Environmental Performance Indicators for Businesses” issued by the Ministry of the Environment (February, 2001).

*URL (<http://www.env.go.jp/policy/report/h12-01/index.html>)

Question 57: Please explain the positioning of the indicators of the environmental conservation benefit.

Answer

The “Table: Indicators of environmental conservation benefits” in these guidelines is positioned as an example for selection of effective indicators which contribute to the company’s understanding and valuation of environmental conservation benefits.

The practical method for calculating the indicators depends on the “Environmental Performance Indicators for Businesses.” If a company uses its own indicators, their details and the rationale of calculation are to be clearly recorded.

Question 58: Companies are requested to select those indicators which are effective for understanding and evaluation of environmental conservation benefits. How do they select these indicators?

Answer

The amount and types of impacts on the environment by companies are determined by the characteristics of industrial sectors and past experience of environmental conservation activities. Companies are expected to fully understand the actual status of environmental impact and select the indicators which appropriately express the benefits on the basis of targets of environmental conservation plan.

When companies select their appropriate indicators, they can refer not only the environmental performance indicators presented by the Ministry of the Environment, but also the information about environmental accounting provided by other companies in a similar industrial field. Further discussion is necessary in each industrial sector so that the practical indicators selected by the member companies can be appropriately determined.

Question 59: How can we quantitatively identify the indicators of reduction of noise, vibration and odor?

Answer

Although we cannot quantitatively identify the reduction of noise, vibration and odor easily, we can quantify it by using the units (e.g. decibel) expressing the degree of noise or vibration, or counting the frequency of complaints.

Question 60: When the indicator expressing reduction of water consumption is calculated, why the amount of water circulated for recycling at the site is not included in such indicator?

Answer

Water consumption is regarded as an indicator to quantify the amount of water consumed as a natural resource. The consumption of recycled water is in-house water consumption, which cannot be accurately measured due to the types of water recycling systems adopted in plants.

Even if the consumption of recycled water is measured, the ratio of the consumption of recycled water to total water consumption is usually 100% and calculating the reduction of water consumption, including the consumption of recycled water, seems to serve no purposes.

Question 61: Please explain environmental pollutants.

Answer

Environmental pollutants are substances regulated by various laws or standards. They include the substances whose concentrations meet certain standards, such as the smoke emission standard specified in the Air Pollution Control Law, the standards for control of listed substances specified in the Air Pollution Control Law, the effluent standard for health management specified in the Water Pollution Control Law and the emission standards for the control of exhaust gas and wastewater specified in the law concerning special measures against Dioxins.

They also include substances which require those concerned to be notified. Class 1 specified chemicals, which are regulated by law to make a quantitative evaluation of and to promote the improvement of the emissions of specified chemicals into the environment, and Class 2 designated chemicals, which are regulated by law to monitor examination and production of chemicals and specified chemicals, are classified into this group.

If the reduction of emissions of environmental pollutants is used as an indicator of environmental conservation benefits, in view of the actual conditions of business activities, the related environmental pollutants should be selected.

Question 62: When we calculate the indicators of reduction of total waste emissions, how can we define “waste”?

Answer

According to Art. 2, paragraph 2 of the Basic Law for the Promotion of a Recycling-oriented Society, wastes are defined as follows:

“Wastes include solid waste, bulky waste, combustion residue, sludge, excrement, waste oil, waste acids, waste alkalis, and solid or liquid wastes such as carcasses, other dirt and unnecessary substances. (Radioactive substances and substances contaminated with radioactive substances are excluded.)” (Quoted from the definition from Art. 2, paragraph 1, of the Waste Disposal and Public Cleaning Law.)

Furthermore, wastes include “the substances which are collected or disposed of after being used or without being used (excluding the substances which are currently being used), the substances which are produced in the processes of manufacturing, processing, repairing/marketing of products or the by-products which are produced in the processes of various activities, including energy supply, construction and agriculture/stock raising. (The above-mentioned substances, radioactive substances and substances contaminated with radioactive substances are excluded.)”

Question 63: In the evaluation of the indicator of the increase in the ratio of recycling use to the total waste emissions, why “thermal recycling is calculated separately”?

Answer

Recycling use includes reuse, recycling and heat recovery (thermal recycling). They are defined as follows:

- Reuse: In principle, no wastes are generated.
- Recycling: In the process of recycling, wastes may be generated.
- Thermal recycling: Heat generated in the process of incineration as an intermediate waste treatment is used.

Ideally, although the totals of reuse, recycling and thermal recycling are calculated separately, their separate calculation may create practical problems. Accordingly, the total for thermal recycling is calculated separately, because thermal recycling is ultimate recycling and leaves no possibility of subsequent recycling of resources.

Question 64: Please explain the indicators of reduction of environmental impacts at the time of use/disposal of goods/services produced in normal business operations.

Answer

Companies cannot directly measure the reduction of environmental impacts at the time of use/disposal of goods/services because, unlike other indicators, this indicator is the benefit recognized after the marketing of goods/services which is affected not only by companies' environmental conservation activities but also by the conditions of use/disposal of goods/services at the customer level.

The method for calculating this indicator has not been established. Because the conditions of use/disposal of goods/services are to be estimated, absolutely correct results of calculation cannot be obtained.

In view of these conditions, we recommend to explain the method for the calculation and the rationale for the use of the indicators of reduction of environmental impacts at the time of use/disposal of goods/services in case of disclosure, so that stakeholders would sufficiently understand them. In the disclosure formats, the benefits valued according to these indicators can be differentiated from other benefits.

(1) Calculation Methods

The following calculation methods are available.

a. Scope

Reduction of energy consumption at the time of use of goods/services

Reduction of emissions of environmental pollutants at the time of use of goods/services

Reduction of wastes at the time of disposal of goods/services

b. Formula

[Reduction of environmental impact per unit good/service] x [Total sales volume] x [Period in which benefits are realized]

c. Period in Which Benefits Are Realized and Time of Recognition of Benefits

The period in which benefits are realized and the time of recognition of benefits depend on the timing of the occurrence of the benefits (whether they appear at the time of use or disposal), and types and quality of goods/services. The following two methods are available.

(a) Benefits at the Time of Use

In the case of consumables and services, the period in which a benefit is realized is generally less than a year. In the case of consumer durables, the period is regarded as the financial accounting period, individually estimated economic durability period or, for convenience's sake, across-the-board estimated years.

The benefits are recognized at the time of marketing.

(b) Benefits at the Time of Disposal

In the case of reduction of wastes resulting from lighter weight of containers/packages or reduction of environmental pollutants included in the waste incineration gas resulting from the improvement of container/package materials, the benefits appear only at the time of disposal; accordingly, the period in which a benefit is realized is limited to one year.

The benefits are recognized at the time of marketing or at the time after completion of the durability period.

(2) Items to be Clarified for Disclosure

The following items are to be clearly mentioned: calculation of the reduction of environmental impact at the time of use/disposal of goods/services as the environmental conservation benefit, scope of goods/services concerned, period in which a benefit is realized and rationale, estimated conditions of use/disposal of goods/services by customers, and formula used for practical calculation.

Question 65: Please explain the impact on society at large of reduction of environmental impacts at the time of use/disposal of goods/services produced by business operations.

Answer

The environmental conservation benefits at the time of use/disposal of goods/services are those on the output side of good/service. Such benefits are occasionally measured on the input side as well corresponding to upstream/downstream costs. In this case, calculating the total throughout society, according to the life cycle of goods/services, may result in a double counting.

Question 66: The company may miniaturize its product and reduce the environmental impact. In this case, to which indicator of environmental conservation benefit does this reduction correspond?

Answer

This reduction corresponds to the following two types of benefits: reduction of the environmental impact at the time of disposal and reduction of the environmental impact resulting from transportation. However, careful judgment is indispensable because miniaturization may decrease durability, or promotion of consumption of disposable low-price products may contribute to overall massive consumption of resources.

Although the attempt to develop compact products is generally made in the designing process, not all attempts are regarded as elements to be considered in an environmental accounting. Such elements include attempts whose part for the purpose of environmental conservation has been clearly positioned in the business strategy at the stage of designing. For example, the environmental conservation costs totaled according to the objective standards and the benefits resulting from the attempts are regarded as these elements.

Question 67: To which indicator of environmental conservation benefit does the benefit of green purchasing correspond?

Answer

An appropriate indicator should be selected according to the actual condition of the company's green purchasing activity. If a company purchase renewable energy, its benefit corresponds to the increase in the ratio of renewable energy to energy consumption. In case of procurement of recycled products, its benefit corresponds to the increase in the ratio of recycled resources to resource inputs.

3.2.3 Method for Measuring Environmental Conservation Benefit

Question 68: Please advise us about the relationship between Method 1 for estimating environmental conservation benefit and total volume/unit per volume.

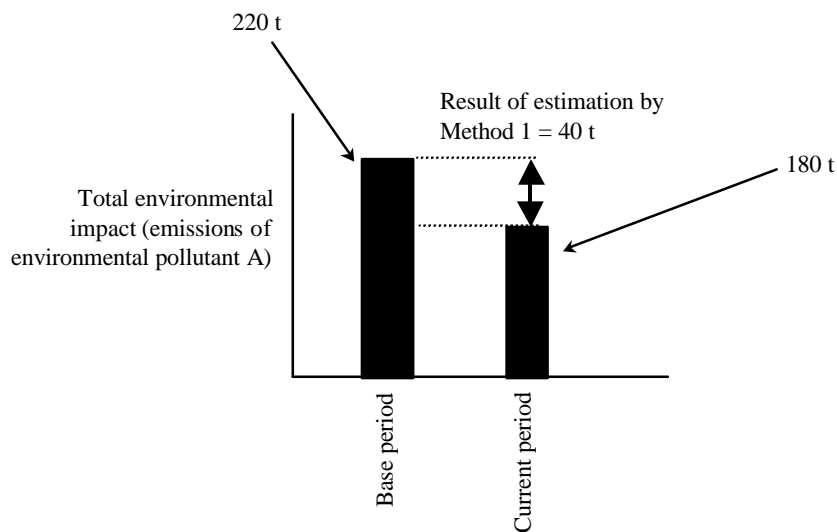
Answer

Applying Method 1 to an indicator showing volume gives the estimated difference between the total volume of environmental impact in the base period and that in the current period. Overall changes in a company's environmental impact can be understood from the results of estimation by Method 1.

The total environmental impact, however, is shown by "unit per volume x volume of business activity." Changes of business activity volume and unit per volume therefore affect the results of estimation by Method 1. Whether the total changes of environmental impact have been affected by environmental conservation activities or by the influence of fluctuations in economy and business results, can be understood by observing the situation of changes of unit per volume and the volume of business activity.

The following explanation shows concrete examples of the above.

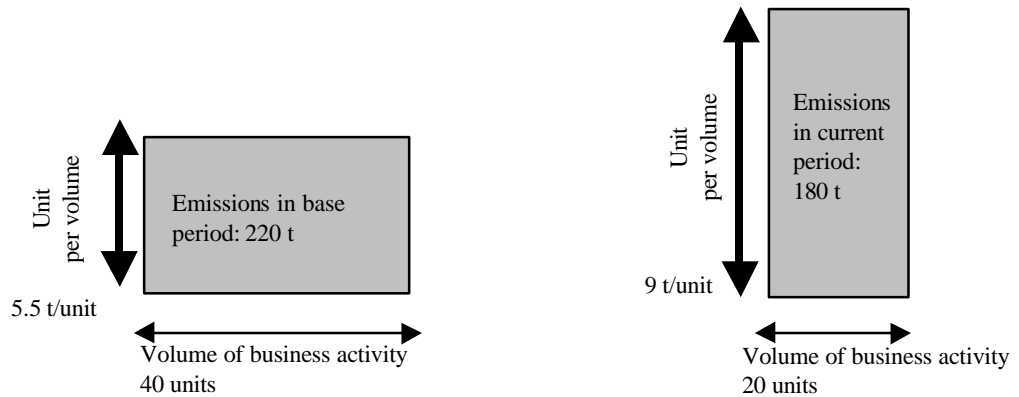
Emissions [tons] (hereafter, "t") of environmental pollutant A in the base period is assumed to be 220 t, and that in the current period is assumed to be 180 t. The result of estimation by Method 1 will be $220 \text{ t} - 180 \text{ t} = 40 \text{ t}$, which means that the company's total environmental impact has decreased on the whole.



Significance from the viewpoint of environmental conservation will vary depending on the situation of fluctuations in the volume of business activity and unit per volume. The following explains the volume of business activity as production volume [unit].

(1) Case 1: When Volume of Business Activity Has Decreased and Unit per Volume Has Increased

Case 1	Base period Emissions of environmental pollutant A 220 t	Current period Emissions of environmental pollutant A 180 t
Volume of business activity	40 units	20 units
Unit per volume	220 t / 40 units = 5.5 t/unit	180 t / 20 units = 9 t/unit

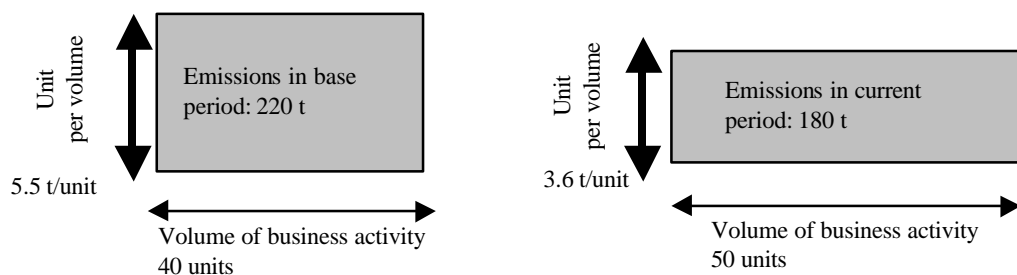


In this case, the unit per volume of 5.5 t/unit in the base period has increased to 9 t/unit in the current period, so we can interpret this as meaning that a benefit corresponding to the company’s environmental conservation cost has not been achieved. In spite of this, emissions of the environmental pollutant A in the current period has decreased from that in the base period because the volume of business activity has decreased from 40 units in the base period to 20 units in the current period.

In other words, overall decrease of total environmental impact is presumed to be due to an influence other than environmental conservation activity by the company, such as worsening of the economy and business results, or the outsourcing of business.

(2) Case 2: When Volume of Business Activity Has Increased and Unit per Volume Has Decreased

Case 2	Base period Emission of environmental pollutant A 220 t	Current period Emission of environmental pollutant A 180 t
Volume of business activity	40 units	50 units
Unit per volume	220 t / 40 units = 5.5 t/unit	180 t / 50 units = 3.6 t/unit



In this case, the volume of business activity has increased from 40 units in the base period to 50 units in the current period. In spite of this emissions of environmental pollutant A in the current period has decreased from that in the base period, because the unit per volume has decreased from 5.5 t/unit in the base period to 3.6 t/unit in the current period due to the occurrence of a benefit corresponding to the company’s environmental conservation cost.

In other words, the results of the company's efforts for environmental conservation activities have negated the influence of the increased volume of business activity, and overall total environmental impact has decreased.

Concerning the case in which the total environmental impact has increased, just as for examples such as Case 1 and Case 2 in which total environmental impact has generally decreased, we can understand more accurately its significance from the viewpoint of environmental conservation by observing the situation of fluctuations in the volume of business activity and unit per volume.

As explained above, fluctuation in unit per volume shows the company's effort for environmental conservation activities, although it does not show overall fluctuations of the company's environmental impact. Therefore, in these guidelines, we always state the results of estimation of differences in total environmental impact, and the differences of unit per volume can be stated in combination with the differences of total environmental impact.

Question 69: Please explain the difference between Method 1 and Method 2 for estimation of environmental conservation benefit.

Answer

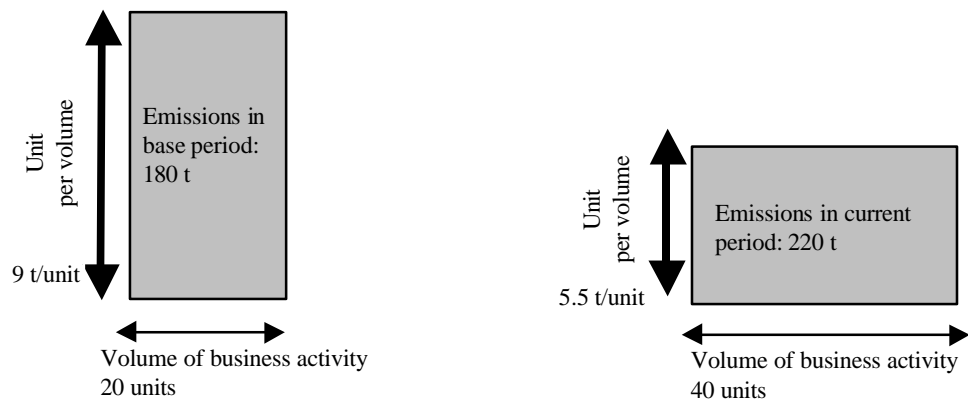
The result of estimation by Method 1 shows overall fluctuation in the total environmental impact as influenced by fluctuations in both unit per volume and the volume of business activity.

The result of estimation by Method 2 shows the fluctuation in total environmental impact when it has been influenced only by unit per volume fluctuations, with no fluctuation in the volume of business activity.

So when unit per volume has decreased as the result of the company's environmental conservation activities (while on the other hand the volume of business activity has increased, and when the total environmental impact has generally increased), Method 1 estimation indicates that no environmental conservation benefit has occurred, and Method 2 estimation indicates that an environmental conservation benefit has occurred.

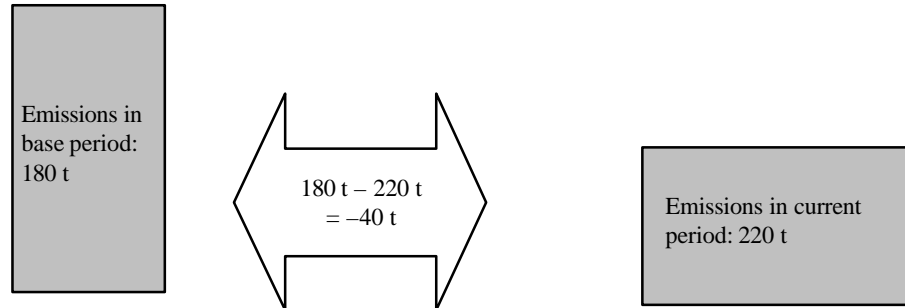
Case 3 in following table explains this example.

Case 3	Base period Emissions of environmental pollutant A 180 t	Current period Emissions of environmental pollutant A 220 t
Volume of business activity	20 units	40 units
Unit per volume	180 t / 20 units = 9 t/unit	220 t / 40 units = 5.5 t/unit



The total environmental impact in the current period has increased on the whole from that in the base period; therefore, the result of estimation by Method 1 will be -40 t as shown by the following expression, indicating that no environmental conservation benefit has occurred.

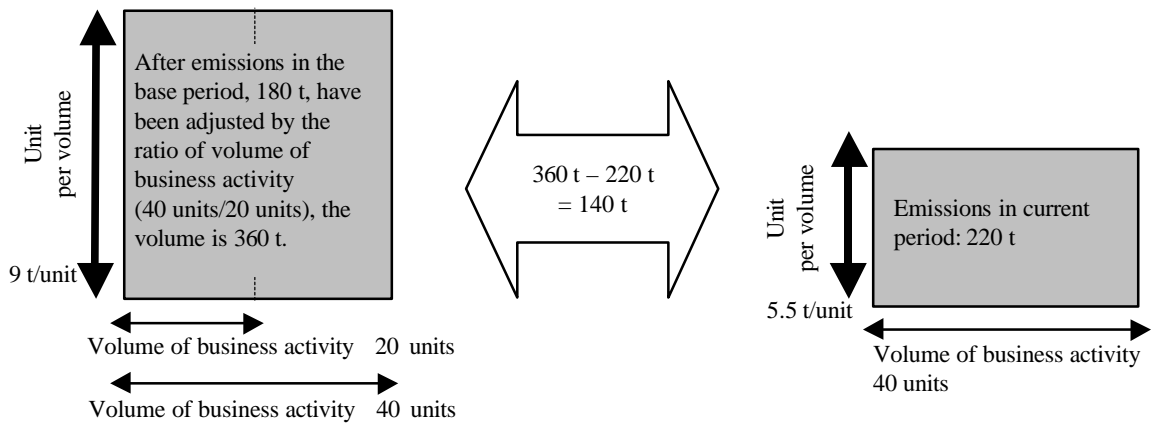
$$\text{Emissions in base period of } 180\text{ t} - \text{emissions in current period of } 220\text{ t} = -40\text{ t}$$



On the other hand, unit per volume in the current period has decreased from that in the base period; therefore the result of estimation by Method 2 using the following expression will be 140 t , indicating that there is an environmental conservation benefit.

$$\begin{aligned} &\text{Emissions in base period of } 180\text{ t} \times (\text{volume of business activity in current period of } 40\text{ units} / \\ &\text{volume of business activity in base period of } 20\text{ units}) - \text{emissions in current period of } 220\text{ t} \\ &= 360\text{ t} - 220\text{ t} = 140\text{ t} \end{aligned}$$

Because the result of estimation by Method 2 does not show overall fluctuation in the company's total environmental impact, it is necessary to evaluate the result of estimation by Method 2 together with the result of estimation by Method 1.



Question 70: Please describe methods that can be used to calculate the environmental conservation benefit by department, by product group and by individual environmental conservation activities.

Answer

Methods 1 and 2 can both be used for calculating ranges to directly grasp the total environmental impact (for a company, corporate group or facility). But the comparisons of unit per volume and business activity volume are considered to be an effective method that can be applied to individual departments, product groups and environmental conservation activities.

In this approach, we calculate the difference between the benefits of reductions in unit per volume (unit per volume benefit) and the benefits of lowered business activity (business activity volume benefit).

$$\text{Environmental conservation benefit} = \text{unit per volume benefit} - \text{business activity volume benefit}$$

The unit per volume benefit is calculated by multiplying the business activity volume in the current period by the difference of unit per volume between current and base periods. This then shows us the total environmental impact resulting from the variations in the unit per volume alone with no change in the volume of business activity.

$$\text{Benefit of unit per volume} = (\text{unit per volume in the base period} - \text{unit per volume in the current period}) \times \text{volume of business activity in the current period}$$

The benefit of business activity volume is calculated by multiplying the unit per volume in the base period by the difference between the volume of business activity in the current and the base periods. This then shows us the total environmental impact resulting from the variations in the volume of business activity alone with no change in the unit per volume.

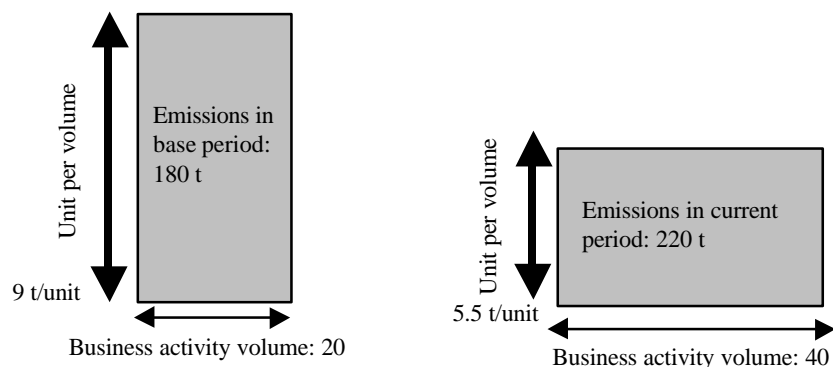
$$\text{Benefit of business activity volume} = (\text{business activity volume in the current period} - \text{business activity volume in the base period}) \times \text{unit per volume in the base period}$$

This method not only calculates the benefits of the business activity volume, which shows us the variations in environmental impact caused by changes in the business activity volume; it also calculates the benefits of unit per volume, which allows us to ascertain the benefits relative to environmental conservation costs. While this method is more complicated than methods 1 and 2, it allows us to perform detailed analysis and is considered useful particularly for internal management.

This method can also be used with indicators that show quantity.

The calculation method is explained using Case 4 in the following table.

Case 4	Base period Emissions of environmental pollutant A 180 t	Current period Emissions of environmental pollutant A 220 t
Business activity volume	20 units	40 units
Unit per volume	$180 \text{ t}/20 = 9 \text{ t/unit}$	$220 \text{ t}/40 = 5.5 \text{ t/unit}$



First, the benefit of unit per volume is calculated to be 140 t, as shown below.

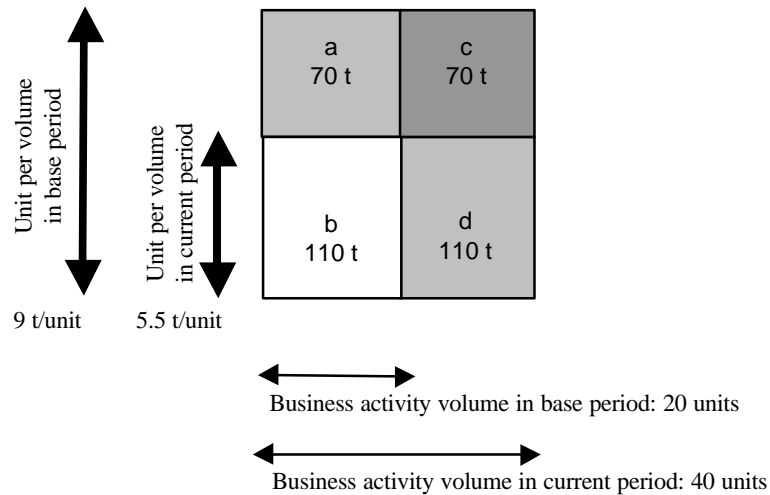
$$\begin{aligned}
 & (\text{Unit per volume in the base period of } 9 \text{ t/unit} - \text{unit per volume in the current period of } 5.5 \text{ t/unit}) \times \\
 & \text{business activity volume in the current period of } 40 \text{ units} \\
 & = (9 \text{ t/unit} - 5.5 \text{ t/unit}) \times \text{business activity volume in the base period of } 20 \text{ units} \\
 & \quad + (9 \text{ t/unit} - 5.5 \text{ t/unit}) \times (\text{business activity volume in the current period of } 40 \text{ units} - \text{business} \\
 & \quad \text{activity volume in the base period of } 20 \text{ units}) \\
 & = a + c = 70 \text{ t} + 70 \text{ t} = 140 \text{ t}
 \end{aligned}$$

This reflects a fall in the unit per volume as a benefit corresponding to the company's environmental conservation costs.

Next, the benefit of the business activity volume is calculated to be 180 t, as shown below.

$$\begin{aligned}
 & (\text{Business activity volume in the current period of } 40 \text{ units} - \text{business activity volume in the base} \\
 & \text{period of } 20 \text{ units}) \times \text{unit per volume in the base period of } 9 \text{ t/unit} \\
 & = (40 \text{ units} - 20 \text{ units}) \times (\text{unit per volume in the base period of } 9 \text{ t/unit} - \text{unit per volume in the} \\
 & \quad \text{current period of } 5.5 \text{ t/unit}) + (40 \text{ units} - 20 \text{ units}) \times \text{unit per volume in the current period of } 5.5 \\
 & \quad \text{t/unit} \\
 & = c + d = 70 \text{ t} + 110 \text{ t} = 180 \text{ t}
 \end{aligned}$$

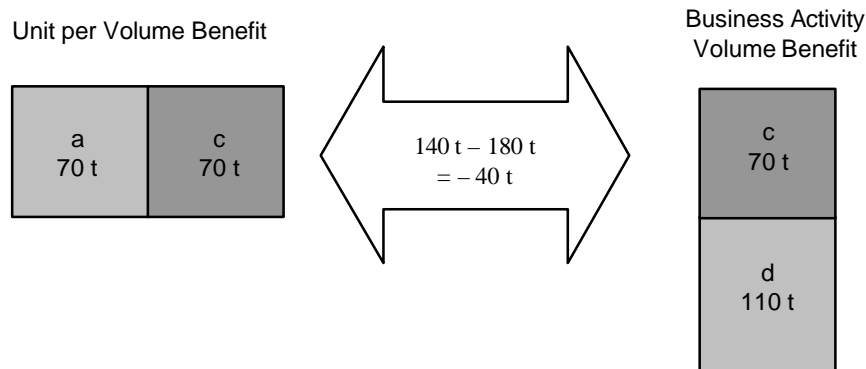
This reflects the rise in the company's business activity volume.



Finally, we calculate the environmental conservation benefit to be -40 t, as follows:

$$\begin{aligned}
 & \text{Unit per volume benefit of } 140 \text{ t} - \text{business activity volume benefit of } 180 \text{ t} \\
 & = a + c - (c + d) \\
 & = -40 \text{ t}
 \end{aligned}$$

The negative value for the environmental conservation benefit indicates that the benefits of increased volume of business activity were more than large enough to offset the benefits of the activities the company put into environmental conservation activities.



Question 71: What is the relationship between environmental conservation benefit and compliance cost?
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Answer

(1) Where a Company Merely Continues to Comply with the Laws, Regulations

The compliance cost is included in the environmental conservation costs. However, in both Methods 1 and 2, it will become more difficult to generate environmental conservation benefits relative to these costs. Consequently, it is anticipated that there will be less numerical correspondence between costs and benefits.

In this case, the stated requirement is to be in compliance with the relevant laws and regulations.

(2) Where a Company Continues to Maintain Standards that Exceed Those Set in Laws

The environmental conservation costs also include the compliance cost that exceeds the requirements of the relevant laws and regulations. However, in both Method 1 and Method 2, it will become more difficult to generate environmental conservation benefits. Consequently, we anticipate that the correspondence between costs and benefits will break down.

However, in the interests of environmental conservation it would be better if companies put even greater efforts into environmental measures rather than merely complying with the various regulations. Accordingly, there is a method to indicate the benefits of such measures in which the environmental conservation benefit of a measure is taken as the difference between factors such as the environmental impact for the current period and the regulatory values and reference values.

Using this method, even when environmental impact is constant over each period, it can still be calculated as having an environmental conservation benefit.

However, where regulatory values and reference values are determined by concentrations rather than total volume, the difference in concentration levels between the current period and the regulatory values/reference values does not by itself show us the overall change in the total environmental impact. The result must be taken together with the benefits yielded by either Method 1 or 2.

Also, there is no correspondence between cost and benefit in this method either. The reason for this is that while the compliance cost is included in the environmental conservation costs, the environmental conservation benefit is only calculated for the extent to which the regulatory values and reference values are exceeded.

Question 72: What sorts of periods, other than the previous period, are taken as base periods?

Answer

An example of a situation where a base period is not simply the previous period would be when a company first initiates a specific environmental conservation activity.

However, when this occurs, it becomes impossible to ensure comparability between companies with differing starting times. In addition, the calculated environmental conservation benefit is for the environmental conservation activities from that time up until the current period, and does not correspond to the environmental conservation costs for the current period. Further, from the viewpoint of reducing environmental impact on an ongoing business, the base period should ideally be the previous period.

From the above, if the time at which a company initiates a specific environmental conservation activity is taken as the base period, the calculation results for the environmental conservation benefit can be reported, but the calculation results when the previous period is used as the base period should be reported at the same time.

Question 73: If a temporary management change results in a significant benefit when the previous period is taken as the base period, how should this be reported?

Answer

If there is a change in the management, such as a restructuring, the details of the change should be provided and, where possible, the benefits of the change on the calculated results should be quantified.

If Method 1 is used to calculate the environmental conservation benefit, the report should include not only the results, but the results of the analysis of the variations in unit per volume and business activity volume so that the significance of the calculation results that include the management changes can be conveyed in detail. (See also Question 68.)

Question 74: How should we set the period in which the benefits of investment are realized?

Answer

To assess the ongoing benefits of investment, we should ideally coordinate those benefits with the depreciation period of the investment.

However, if this adjustment is problematical because the durability period of the different pieces of equipment varies, it is also possible to set an appropriate fixed number of years or set a recognized year as the cut-off point for the benefits of the investment.

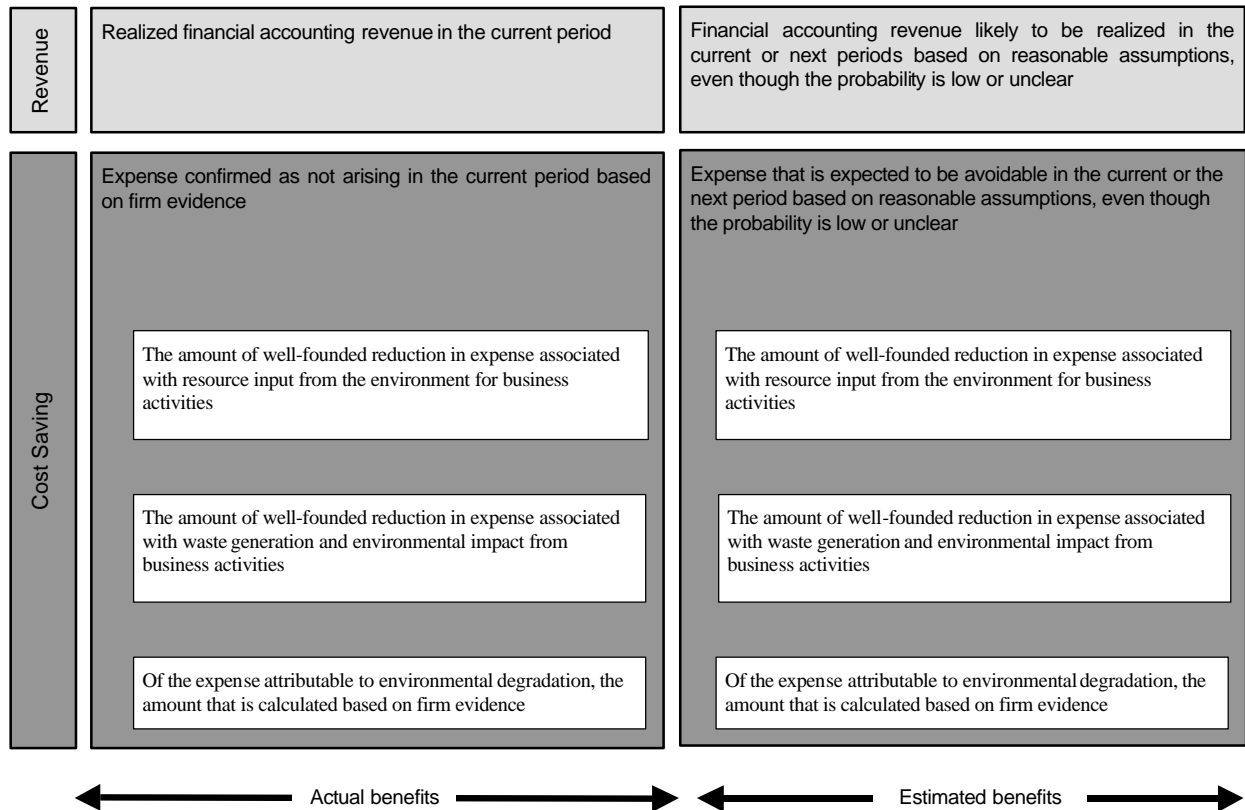
Set the period in which investment benefits are realized and depreciation should be included in the environmental accounting report along with the thinking underlying the choice of settings.

3.3 Economic Benefits Associated with Environmental Conservation Activities

Question 75: What is the relationship between actual benefits and estimated benefits, and what sorts of estimated benefits are there?

Answer

The economic benefits associated with environmental conservation activities are separated into actual benefits and estimated benefits, depending on the degree of certainty that underlies those benefits. The figure below lists both types of benefit with regard to revenue and cost saving.



Details of estimated benefits are as follows:

(1) Revenue

Revenue as an estimated benefit is the financial accounting revenue that is thought likely to be realized in the current or the next period on the basis of reasonable assumptions, even though the probability is low or unclear, as a result of environmental conservation activities that have been carried out.

Examples are additional revenue arising from research and development aimed at environmental conservation and additional revenue arising from an improved corporate image.

(2) Cost Saving

Cost saving as an estimated benefit is expense that is expected on the basis of reasonable assumptions, even though the probability is low or unclear, to be avoidable in the current or the next period as a result of environmental conservation activities that have been carried out.

Cost saving falls into three categories: reduction in expense associated with resource input from the environment for business activities; reduction in expense associated with waste generation and environmental impact due to business activities; and reduction in expense arising from environmental degradation. See also question 77 for more information on the reduction of expense arising from environmental degradation.

(3) Other

Examples of estimated benefits not shown in the above figure include contributions to profit calculated when the company includes in its profit complex economic benefits attributable to environmental conservation activities that result from internalized environmental conservation activities, without differentiating between revenue and cost saving. This is an attempt to directly assess added value.

Question 76: What aspects of estimated benefit settlement and reporting require particular attention?

Answer

Estimated benefits are regarded as being useful information for internal management. Also, the inclusion of estimated benefits as well as actual benefits reveals a wider range of possible profit to companies, resulting from long-term environmental conservation activities. Consequently, estimated benefits can serve as indicators used in in-house decision making on the progress of environmental conservation activities.

However, because there is a degree of uncertainty associated with the calculations for estimated benefits, the validity of the basis on which the estimations are made should be examined very carefully so as to minimize the uncertainty. A valid basis rests on verifiable numerical data, not vague expectations.

For this reason, where calculated results for estimated benefits are reported, as a precaution they should be separated from those for actual benefits and should include the following:

- The aim of calculating the estimated benefit
- The calculation method
- How the company valued the certainty of the benefit and the basis for that certainty

Question 77: Of the estimated benefits, what aspects of reductions in expense arising from environmental degradation should be clarified as regards the calculation method and reporting?

Answer

When reductions in expense arising from environmental degradation are calculated as an estimated benefit, the following 2 estimations are required:

- An estimation of the probability that environmental degradation will occur in the current or next period
- An estimation of the amount of expense that will be avoided

When this benefit is reported, the estimation methods for the above factors must be clearly stated.

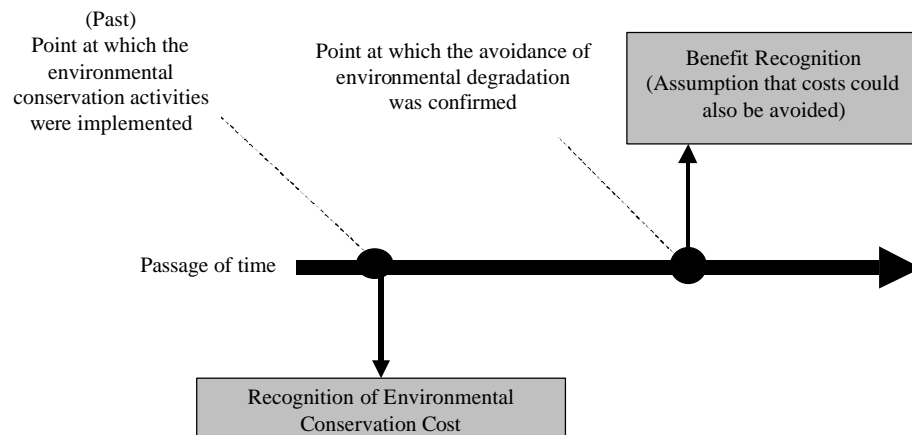
In terms of the calculation method for such benefits, there are following two approaches in the currently published instances.

(1) Calculation of the Benefits Realized during the Current Period

If it has been confirmed on the basis of reasonable standards that the occurrence of environmental degradation has been avoided in the current period as a result of environmental conservation activities implemented in the current period or a previous period, this approach assumes that the costs arising from the environmental degradation have also been avoided and calculates the avoided costs accordingly.

For this approach, no estimation of the probability that environmental degradation will occur in the current period or the next period is required, and the avoided cost is taken as a benefit.

One application for results calculated using this approach is post-event evaluation of pollution prevention measures.



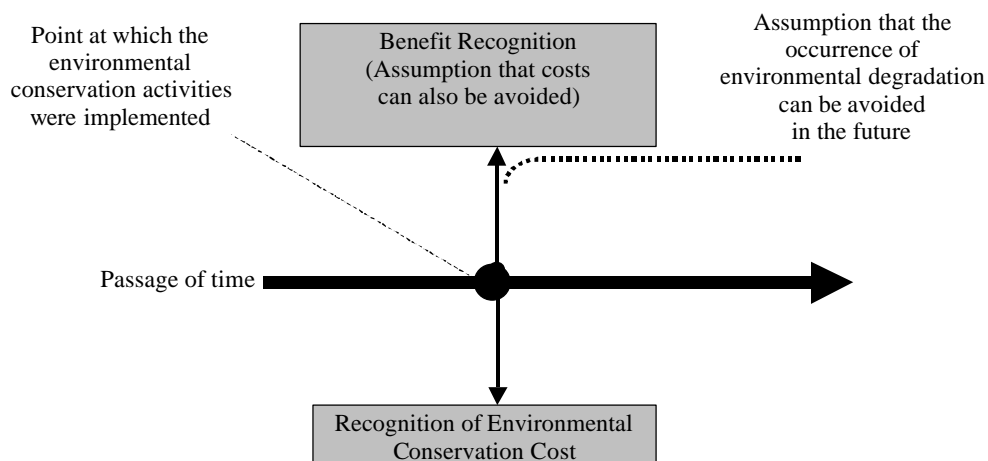
(2) Calculation of Benefits Expected to be Realized in the Future

This method works on the assumption that not only can environmental degradation be avoided in the next period as a result of environmental conservation activities in the current period, but that the costs arising from that environmental degradation can be also avoided, and the total avoided cost is calculated on that basis.

This method requires an estimation of the probability of environmental degradation occurring in the next and subsequent periods and an estimation of avoided cost.

In this approach, the benefit is taken either as the cost obtained when the probability of environmental degradation occurring in the future is multiplied by the avoided cost, or simply as the avoided cost obtained when the occurrence probability is set to a high level.

Applications for results calculated using this approach include pre-event valuation of pollution prevention measures and valuation of the likelihood that environmental reform targets will be reached in environmental management systems.



Question 78: In terms of actual benefits, which aspects require particular attention when the reduction in expense associated with resources input from the environment in business activities is calculated?

Answer

(1) Cost Saving Due to Lower Resource Unit Prices

Even if resource types or quality or the amounts used do not change, the cost of resources such as raw materials, energy or water may drop because resource unit prices fall due to changes in factors such as market prices or exchange rates. However, because this is not a result of the implementation of environmental conservation activities, it does not constitute an economic benefit associated with environmental conservation activities.

(2) Cost Saving Due to Lower Levels of Resource Input

If the level of input in resources of equivalent quality falls or the cost of resources such as raw materials, energy or water falls when changes are made to manufacturing methods or component materials with the aim of conserving the environment, this qualifies as an economic benefit associated with environmental conservation activities.

This does not apply when the aim is other than environmental conservation.

(3) Calculation Method

In the calculation method shown in these guidelines, cost savings that are not economic benefits associated with environmental conservation activities are included and calculated.

However, if those reductions that do not result from environmental conservation efforts are represented as benefits, this could lead to misunderstandings by stakeholders. For this reason, the expense on resources such as raw materials, energy and water for each target period should be expressed as “unit price x input amount,” so that the influence of the unit price and input amount on the calculated saving in cost is analyzed. Thought must be given to use of this analysis to eliminate the influence of factors other than efforts towards environmental conservation activities from reports of cost saving.

4. Disclosure of Environmental Accounting Information

Question 79: Which points require particular attention when disclosing the valuations of the economic value of environmental conservation benefits?

Answer

The valuation of the economic value of environmental conservation benefits differs in terms of content from the economic benefits of environmental conservation activities (see also the answer to question 04) and is reported separately.

Also, in order to calculate the economic benefits of environmental conservation activities in monetary terms, specific calculation methods are described. Calculation methods are provided for each of the main environmental conservation benefits and the approach and basis are shown in each case. Where references are made to scientific research, the sources are also given.

Question 80: What is the significance of period comparison?

Answer

As environmental conservation activities progress, the trend is for the benefits of the measures to gradually decline even when the environmental conservation costs are kept at the same level as for the previous period. Consequently, companies that have continued to push ahead with environmental conservation activities may have difficulty generating equivalent progress in the benefits achieved.

In this event, the environmental accounting calculations for the current period are not by themselves suitable for valuating the company's environmental conservation activities. We must also consider past environmental conservation activities. Comparisons of different periods are an effective means of achieving this.

Question 81: What sort of explanations should be given for environmental accounting calculation results?

Answer

Results that use environmental accounting to give a quantitative assessment of environmental conservation activities are analyzed and valued by managers themselves. These results further clarify the current status and future directions of the company and are effective in making the information easier for users to understand.

Methods of this sort are also becoming valid reporting items for management discussion and analysis in information reports on corporate financial affairs.

5. Other

Question 82: What are the indicators that combine items calculated in environmental accounting with business activity volume?

Answer

By using indicators that combine several of the items calculated in environmental accounting with indicators of business activity volume, it is possible to show the significance of the accounting results from a variety of perspectives. Also, by comparing these indicators across reporting periods, it becomes easier to see the development of the efforts devoted to environmental conservation activities by the company. There are also instances where such indicators have been used within companies to set targets for environmental conservation activities.

Where the indicator results are reported, the calculation methods should be clearly stated.

The types of indicator that are currently most often used in published instances are described below.

(1) Indicators Used to Analyze Environmental Conservation Cost as a Proportion of Total Business

It is appropriate to assess environmental conservation cost not in terms of their absolute scale, but relatively in comparison with the business scale. The indicator used for this purpose is given by the following equation:

$$\text{Environmental conservation cost} / \text{Wider-range costs that include the environmental conservation cost}$$

As the numerator and denominator in this fraction, select the types of cost that are related to environmental impact and environmental conservation activities according to the business activities.

For example, for companies where the environmental impact of the production facilities is high and capital investment is a key environmental conservation activity, the amount of investment aimed at environmental conservation could be used as the numerator, while the denominator would be the company's total investment amount. Alternatively, in a company where the environmental impact of its products is high and the R&D cost aimed at reducing that level of impact is an important environmental conservation activity, the R&D cost for environmental conservation purposes would be the numerator and the total amount spent on R&D would be the denominator.

(2) Indicators Used to Analyze Efficiency Relative to Environmental Conservation Cost

It is important that the value spent on environmental conservation is used efficiently to achieve the intended environmental conservation benefits. The following equation gives the indicator used for this purpose:

$$\text{Environmental conservation benefit} / \text{Environmental conservation cost}$$

So as to assess benefits relative to cost, the environmental conservation benefit is used as the numerator and the environmental conservation cost as the denominator. Examples are given below:

Reduction in emissions of an environmental pollutant /

Environmental conservation cost to reduce emissions of the substance

Reduction in water use / Environmental conservation cost to reduce water use

Reduction in energy consumption / Environmental conservation cost to reduce energy consumption

Reduction in the total waste generation / Environmental conservation cost to reduce the total waste generation

Where it is difficult to establish a strict correspondence between the environmental conservation benefit and the environmental conservation cost, the total environmental conservation cost in the current period is sometimes used as the denominator.

(3) Indicators Used to Eliminate the Impacts of the Business Activities from the Size of the Environmental Impact

Ascertaining the total environmental impacts is fundamental to assessment of the environmental impacts caused by business activities, since business activities are not tied to environmental conservation unless the total amounts decline. However, it is also true that the pursuit of profitability is integral to the performance of business activities. To achieve profitability and reductions in the total environmental impacts, it is effective to compare and ascertain the business activity volume and environmental impacts.

When environmental impacts fall as a result of factors such as the company breaking up, factory closures, or some business activities being outsourced, comparisons of this sort can also be used to assess the level of environmental impact from which the effects of those business activities were eliminated.

The following equations give indicators of this type:

(1) Amount of environmental impact / Volume of business activity

(2) Volume of business activity / Amount of environmental impact

Equation (1) gives the environmental impact per unit of business activity volume, which is sometimes referred to as the intensity of environmental impact. Equation (2) gives the volume of business activity per unit of environmental impact, which is sometimes called the eco-efficiency.

When the indicator is calculated, the calculation ranges for the numerator and denominator must be matched.

For business activity volume, select an indicator that relates to environmental impact according to the nature of the goods and services provided and the calculation units used. For example, in a manufacturing company, this would typically be the production value or volume. In a non-manufacturing company, it might be the number of employees and the total floor area.

Question 83: On what kind of points must we focus for accurate understanding of environmental accounting data?

Answer

The company's environmental conservation activities should be comprehensively evaluated, not by using environmental accounting data alone, but all of data stated in an environmental report. It is also necessary to understand corporate profile for judging the appropriateness of the content of its environmental conservation program and evaluating the levels of absolute values shown in the quantitative data.

For instance, the values of quantitative data fluctuate greatly with company scale. The various environmental impacts also differ depending on the type of business and on business conditions. Further, the content of programs for environmental conservation activities changes with the positioning of environmental consideration in the business policies and concrete action plan, and the setting of targets for environmental consideration.

When the content of the program has changed in this way, some differences will occur in the structure of environmental conservation costs and the economic benefit items that accompany environmental conservation benefit and environmental conservation activities.

(1) Environmental Conservation Cost

It is inappropriate to do simple comparisons and evaluations of the situation of companies' environmental conservation activities by the increase/decrease or size (large or small) of the total environmental conservation cost that is clearly indicated by environmental accounting. The content and characteristics of environmental conservation costs should be thoroughly examined.

For example, a company's environmental activities may result in an environmental conservation cost greater than that needed to simply observe the environmental regulations: such as in cases the program has covered environmental impact items that are not directly regulated, and in cases the measures for items to be controlled have been carried out at levels higher than those regulated. It is difficult to evaluate these uniformly. For instance, when the environmental conservation cost to comply with regulations and to maintain a fixed benefit of environmental conservation is small, it may mean that efficient measures have already been taken, while on the other hand, in the stage of expanding the scope of measures for environmental conservation, rather large amounts of environmental conservation costs have been incurred, meaning that environmental conservation measures are being carried out vigorously.

To understand environmental conservation costs, it is therefore not sufficient to focus only on the amount of the total environmental conservation cost. It is necessary to carry out comprehensive judgments of the condition of the progress of the company's environmental conservation activities; transition from one period to another; differences between its cost structure and those of other companies; and its environmental impact level, etc.

(2) Environmental Conservation Benefit

The characteristics of business sectors in relation to environmental impact are reflected in the environmental performance indicator selected by each company. For companies carrying out the same kind of business development, individual companies are assumed in most cases to have selected a common environmental performance indicator.

Also, the extent to which the benefit will be realized is greatly swayed by the condition of progress of the company's environmental conservation activities, and it gradually becomes more difficult to see the benefits of environmental conservation costs. This is because, for instance, in the initial stage of an environmental activity, results can be easily achieved by introducing the newest technology available, but when the activity has advanced there is no hope of major accomplishments without some kind of breakthrough.

Therefore, we can understand a company's current position from the explanation of the results of total environmental conservation benefit, and can understand the overall image of the company from the environmental conservation benefit together with the environmental performance indicators shown in the environmental report.

(3) Economic Benefits Accompanying Environmental Conservation Activities

The framework of environmental accounting is constituted of the portion that can be compared in monetary value and the portion that can be compared by physical units, so it is not appropriate to carry out evaluations solely in monetary value for the difference between the economic benefits of environmental conservation activities and the environmental conservation cost.

The occurrence of economic benefits of environmental conservation activities is important to the sustainability of companies, but it is difficult to recognize and measure all such benefits. Also, there is a limit to the number of substantial benefits that can be calculated with any degree of ease, so the benefits of environmental conservation activities will be underestimated if aspects of these are understood only as substantial benefits.

The attempt to show the greatest possible economic benefit by concentrating on the difference between the environmental conservation cost and the economic benefit may have certain significance for internal utilization regarding the flexibility of business administration items, but there are many items for which the basis of estimation is unclear, and there are also many arbitrary items, so it is possible that stakeholders may misunderstand the environmental accounting data.

<p>Question 84: Please advise us of the difference between environmental accounting systems and financial accounting systems.</p>
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Answer

In financial accounting, financial statements include profit and loss statements, balance sheets, cash flow statements, and earned surplus statements. Among these, the profit and loss statement provides flow information showing revenue and expenses during the target period, and the balance sheet provides stock information showing the conditions of assets, debt, and capital at the end of the target period.

On the other hand, the environmental accounting framework in these guidelines basically consists of flow information and shows environmental conservation costs, environmental conservation benefit, and economic benefits associated with environmental conservation activities in the target period. But among the environmental conservation costs, the statement of the amount of investment shows the portion obtained in the current period among the stock information that is basically included in fixed assets. This information is used for reference in estimating future investment benefits over the long term.

In environmental accounting, cumulative benefits from the past such as ground contamination conditions, for instance, can be considered as information regarding stock, that shows the conditions of environmental conservation at a particular point in time. In the future, when a method has been developed for quantitative measurement of environmental assets and environmental debts, there is a possibility that stock information can be systematized.

However, cash flow statements and earned surplus statements, which are the itemized statements showing increase/decrease and remainders of cash and earned surplus, are not assumed at present, because there is no single indicators that corresponds to cash and no concept that corresponds to earned surplus.

Question 85: Please let us know how you are applying environmental accounting to the general construction industry.

Answer

The general construction industry is characterized by the following factors:

- The industry uses a wide range of materials in its operations, the volume of which is vast;
- The scope of the industry is large, and it accounts for a substantial proportion of the domestic economy;
- Construction projects are multi-layered operations encompassing a broad range of occupations and subcontracting work (for supply of materials, workers, etc.) to the various companies involved in the project;
- Construction work is undertaken on a project-by-project basis, with each project being different in terms of building use, structure, scale, existence of basement etc., specifications of facility and materials, method of construction, etc. and location.
- In comparison with manufactured products, construction projects take a substantial amount of time to complete, but the completed work lasts as social infrastructure for considerably longer;
- A large proportion of large-scale projects are joint venture operations.

Items that have to be taken into consideration in the course of performing general construction work are as follows:

(1) Construction Waste

Construction operations often yield construction side products. The cost of recycling or disposing of such products falls under resource recycling cost, which itself falls under business area cost. The cost of recycling construction waste such as concrete chunks that arise from building demolition and refurbishment operations is considered to be essentially the same as cost for collection, recycling of products, merchandise into new products, and appropriate disposal and therefore falls under upstream/downstream cost.

In the construction industry, however, demolition work is treated as a type of construction work such as new construction or restoration work, and is also generally managed within the scope of the party contracted to perform the work treated as work to be carried out in preparation for construction work, and is therefore generally treated as resource recycling cost under business area cost.

Demolition work yields vast amounts of construction waste. The law requires that the contracting party has a duty to indicate the conditions for disposing such waste in the construction specification sheet as well as to withhold sufficient funds to cover such costs, while the party contracted to carry out the demolition work, who directly generates the construction waste, is responsible for the appropriate disposal of such waste. Accordingly, when drafting said specification sheet it is important to describe in detail the method of differentiating between costs as well as the method of disposal.

(2) Application of Environmental Accounting to Construction Projects

As indicated in the above section concerning the features of the construction business, each construction project has its own peculiar characteristics. Consequently, in order to identify the environmental conservation cost and the benefits of funding allocated to such cost it is necessary to select cost classifications in accordance with the peculiarities of the construction project concerned.

Given that construction projects often entail numerous orders for construction materials, as well as sub-contracts for provision of labor, etc., it can be quite difficult to identify the precise values for the various items involved in a construction project. Nevertheless, one should attempt to identify such values through rational estimates wherever possible.

Once completed, construction works, often function as long-term social infrastructure. Furthermore, in recent years increasing emphasis has been placed on achieving a balance between architectural planning and design and cost appraisal and environmental impact assessment of the full life cycle of a construction work, including its maintenance, refurbishment and demolition. In such cases it is effective to make a trial estimates of environmental cost accounts of the life cycles of individual construction projects at the planning and design stages. When attempting this, given the number of parties involved in the environmental conservation activities involve (the main contractor, the project contractor the construction contractor as well as the construction workers themselves, etc.) and the complexity of the environmental conservation cost attributable to each party and the difficulty of determining the appropriate allocation of such, as well as the danger of overlap in the resultant accounts, one should differentiate such items from the parts concerning the environmental conservation cost not borne by the company concerned.

At the sum-up stage, environmental accounting may be divided into consolidated, corporate, segments and business site. However, given that construction work is different from manufacturing in that the end product is produced by way of a project involving a large number of parties, in the case of general construction work individual contractors should attempt to identify their own environmental accounting on a project basis separately from attempts to identify environmental accounting on a corporate level for each company involved in the project. Accordingly, disclosing information for use as reference information concerning a typical construction project would promote understanding among stakeholders of the structure of environmental cost accounts for the general construction industry.

(3) Environmentally Conscious Construction

Expenses included in main building construction indicated by the construction contractor required for the prevention of noise, vibration and smell may be included in the construction price of the construction company, and the economic benefits of this are entered under construction income. Furthermore, the credit for the environmental conservation benefits of such efforts may be taken by the construction contractor, thereby promoting a certain kind of environmental business.

(4) Joint Venture Project

In the case of work contracted under a joint venture, all environmental conservation efforts made by parties other than the key party constitute indirect efforts. In such case, it is necessary to establish a standard of identification and valuation to determine whether the project concerned for which environmental conservation cost and environmental conservation benefit are to be valued will be that in which one's own company is key party or whether to include projects where one's company is not the key player, and to make a special note of this.

(5) Construction of Facilities for Environmental Conservation

Some of the work offered to clients includes work that constitutes environmental business such as construction of waste treatment plants, or restoration of contaminated ground. Data that can be disclosed after differentiating such that differences in content may be readily understood by stakeholders may include such things as the number and type of facilities for environmental conservation, the number of completed environmental facilities as well as the proportion that such facilities account for among all orders for construction of facilities received.

Question 86: Please let us know how trading companies are responding to environmental accounting.

Answer

(1) Characteristics of Trading Company Environmental Accounting

Although few trading companies are directly involved in production activities, many perform operations in support of this, including merchandise transactions, distribution, data provision and finance. In this respect, when examining efforts by trading companies towards environmental conservation, as well as direct impact made from the company offices, one must also consider the significance of its indirect impact on the environment that occurs through products handled, distribution, the provision of data services and financing projects. In view of these circumstances, efforts by trading companies towards environmental accounting are characterized by the following factors:

- Identification and valuation of office-based environmental conservation cost and the benefits associated with environmental conservation activities.
- Identification and valuation of environmental conservation cost and benefit. Such cost could arise from the process of searching for environmentally conscious products establishing a sales route, as well as assessment of the environmental impact of such products.
- Identification and valuation of environmental conservation cost of manufacturing performed by the company itself; methods for the environmental conservation benefit and the benefit associated with environmental conservation activities follow to the manufacturing industry.
- The actual amount for investment or financing of environmental business of the clients does not constitute a cost or depreciated asset and accordingly does not constitute an environmental conservation cost. Such amount, however, could be treated as an application of environmental accounting by adding a note.

Furthermore, in the case of investment, by identifying it in consolidated terms it is possible to take into account the cost and benefits within the framework of environmental accounting.

(2) Approaches to Identification of Data for Public

In order to identify the indirect though substantial influence of the efforts of trading companies towards environmental conservation, various tools may be employed such as evaluation through consolidated environmental accounting, or by entering in connection with other types of information such as the following, which could be used as supplementary information:

- The loans and/or investment amount for environmental conservation activities and the proportion of that total it accounts for
- Types and description of environmental business of the subject of loans and/or investment
- The amount for environmentally conscious products handled and the proportion of overall sales that accounted for by such products
- Types and description of handled environmentally conscious products

Question 87: Please let us know how the distribution company is responding to environmental accounting.

Answer

Distributors such as supermarkets, department stores and convenience stores have a strong influence on consumer behavior, and are in a position to promote environmentally conscious lifestyles. The business operations of distributors are characterized by the embodiment of manufacturing, distribution and sale. There are cases where factories or distribution centers are the areas of business partners, in many cases the head office is in control of management policies. On the sales front, establishment of both environmentally conscious products and environmentally conscious stores are essential in view of environmental conservation.

(1) Environmentally Conscious Products

Society is counting on the distribution company to increase its handling of environmentally conscious products as an important environmental measure. Consequently, it is desirable that sales of environmentally conscious products be taken into account as an aspect of environmental accounting. As a precondition to this, however, it is necessary to first define environmentally conscious products. Furthermore, in order to gain a better understanding of such data, it would also be desirable to indicate types of such product by category as well as the rate of overall sales accounted for by such products.

(2) Environmentally Conscious Stores

The majority of convenience stores are operated by independent proprietors under a franchising network. Matters regarding management policy, however, are managed by the franchise headquarters. Under the management of the headquarters, environmental conservation activities such as environmentally conscious store design and facilities investment are also carried out and such activities are also subject to environmental accounting.

Given that franchised stores are operated by independent proprietors, it is difficult to directly identify and evaluate the environmental conservation cost and the economic benefits associated with environmental conservation activities. Identification and valuation of environmental impact or the environmental conservation benefit is relatively easy, however, as such information is controlled by the headquarters and therefore easily obtainable. One method of valuation could be to use a typical store as a sample to perform a fixed estimate of the amount spent on investment in environmental conservation facilities or the proportion of store expenditures attributable to environment conservation activities.

The manufacturing plants and distribution centers that provide products and services to stores are also independent operators. As the operating policies of such entities are also managed by a headquarters, it is also possible to take them into account in environmental accounting using the same approach as is done with businesses run under a franchising system.

Question 88: Please let us know how the financial institution is responding to environmental accounting.

Answer

(1) Characteristics of the Financial Institution from the Perspective of Environmental Conservation

Although the financial institution has little direct impact on the environment, it has a strong influence on the overall economy through the functions of financial services such as the saving, lending, investment, entrustment and insurance. The sector is in a position to gear industry towards environmentally conservation activities by taking into account the environmental impact and environmental efforts of companies when making decisions regarding the lending and investment.

On the other hand, however, it is necessary for financial institutions themselves to manage environmental risk such as credit risk due to poor business performance or falling collateral value of the borrower in the wake of an environmental accident caused thereby. Furthermore, it is important for financial institutions to make efforts to control the environmental impact of their head and branch offices.

(2) Approaches to Identification of Data for Public

As is true with other sectors, it is important for financial institutions to make direct efforts towards environmental conservation starting with their own office.

In the case of financial institutions performing lending investment or insurance operations, however, some adaptation is required.

For example, they could classify costs for factoring into an assessment of the environmental risks of a loan recipient or disclose the data in an environmental report. Such information includes the amount of funds extended to environmentally related matters, the sales of eco-fund, the performance of environmental remediation insurance, from which it is difficult to identify and evaluate environmental cost or economic benefits associated with environmental conservation activities, while connecting this with other significant data.

Question 89: Please let us know about the applicability of environmental accounting to environmental businesses.

Answer

In businesses whose core business is the sales and services for products designed for application in environmental conservation, the concept of determining environmental costs of a product or service based on the objective standards has yet to be applied. The reasons are that costs of environmental businesses are deemed to be expense for environmental conservation under these guidelines, and there is the possibility that the scope of items subject to valuation for having been affected by such expense may expand.

On account of this situation, in taking into account the fact that actual treatment has yet to meet full maturity, these guidelines have not always been consistent in its opinions. We will, however, introduce one case in which environmental accounting has been applied to the environmental business. In the course of disclosing environmental accounting data on an environmental business, one should first state preconditions as required to avoid misunderstandings by the user.

(1) Financial Performance

There are two aspects regarding cash-denominated environmental conservation cost and economic benefits associated with environmental conservation activities in monetary values, in environmental businesses: A.

That which follows these guidelines and, B. That which takes greater account of environmental accounting.

a. Determination of Additional Cost Items for the Reduction of Environmental Impact

In order to ascertain environmental cost, additional investment and cost that were used to improve product functions or services are determined from operating expenses for environmental business operations that are already being carried out. In order to ascertain additional cost, complex cost is identified and a method of evaluation is applied with modification if required.

In order to ascertain the economic benefits associated with environmental conservation activities, additional operating income, which is the consideration for products that have had their functions improved or service which has been improved through investment of additional cost is determined from overall costs. In such case, in order to make the information readily understood, one should include a breakdown of the benefits of the costs and operating income.

This approach is applicable when the entire business is involved in the environmental business. However, in the case of the approach that focuses only on additional costs and benefits, the scope of focus may get smaller the more advanced the efforts of the company.

b. Determination of Specific Goods and/or Services Handled as Part of the Company's Environmental Business

Environmental conservation costs are viewed as a direct investment amounts or costs concerning a specific goods and/or service included within operating expenses.

Specific goods and/or services are determined in accordance with the degree of their benefit on environmental conservation or their financial importance to the company concerned. Costs directly attributable to specific goods and/or services are determined, by identifying complex cost and applying a method of evaluation with modification if required.

The economic benefits associated with environmental activities are viewed as the entire operating income, which is consideration for a specific goods and/or service. Here too, one should indicate a breakdown of costs to benefits and operating income.

This approach can be applied in the case where a specific department or subsidiary specializes in environmental business. It is difficult, however, to determine the scope of "specific" items, and if this is applied in a vague manner, there is the possibility that environmental accounting data will not differ much from financial accounting data presented by business type or by segment.

Taking into account of financial performance in environmental accounting of environmental business

Approach	Consistency with These Guidelines	Example of Application
A. Determination of additional cost items for reduction of environmental impact	The same approach as the standard treatment in these guidelines	When the entire company itself specializes in environmental business
B. Determination of specific goods and/or services	An extension of the standard treatment in these guidelines	When specific parts of goods and/or services of a business are subject

Furthermore, in regard to the environmental conservation costs of environmental business, differentiating upstream and downstream costs becomes an issue when interpreting goods and/or service costs produced. Environmental conservation costs that account for a main business should be treated in the same way as described in these guidelines.

(2) Environmental Performance

With regards to environmental conservation benefits, even in companies that specialize in environmental businesses, it is possible to express benefits as being solely attributable to a single business entity. In other words, it is possible to recognize and measure the environmental conservation benefits concerning the resources allocated to business operations, the environmental impact and waste that arises from business operations, and transportation of goods.

The characteristic of companies that specialize in the environmental business is that the environmental conservation benefits appear as a reduction in environmental impact only during use or disposal of goods and/or services produced by the business concerned. When intending to indicate such benefits as they appear at the customer's business, including environmental conservation benefits, one should indicate precautionary notes such as preconditions. For specific details, please refer to Question 64.

Question 90: Please let us know about any changes that have been made since the Environmental Guidelines 2000.

Answer

We have revised in the latest Environmental Accounting Guidelines by greater clarification of external functions, greater elaboration of environmental conservation costs, clarification of environmental conservation benefits and the economic benefits associated with environmental conservation activities. In revising the guidelines, we consolidated subject matter on a common theme, which had previously been spread through various sections of the book, into one place and added explanations where necessary. The following table summarizes the aspects of the Environmental Accounting Guidelines 2002 that were revised. For details please refer to the Guidelines itself, the explanations therein or the content of the above Q&A

Introduction
<ul style="list-style-type: none">▪ We clarified the fact that we position environmental accounting data as important item in environmental reports.
1. What is Environmental Accounting?
1.1 Definition
<ul style="list-style-type: none">▪ We established this as a new section.▪ We rearranged the content of the Environmental Accounting Guidelines (2000 Version).
1.2 Functions and Roles of Environmental Accounting
<ul style="list-style-type: none">▪ We rearranged the content of the Environmental Accounting Guidelines (2000 Version) so as to present it in more detail.
1.3 Basic Dimensions of Environmental Accounting
<ul style="list-style-type: none">▪ We established this as a new section.▪ The new text clarified the basic requirements of environmental accounting.
1.4 Structural Elements of Environmental Accounting
<ul style="list-style-type: none">▪ We established this as a new section.▪ We rearranged the content of the Environmental Accounting Guidelines (2000 Version) so as to present it in more detail.

<p>2. Basic Environmental Accounting Elements</p> <p>2.1 Significant Environmental Accounting Policies</p> <p>2.2 Target Period and Scope of Calculations</p>
<ul style="list-style-type: none"> ▪ We established this as a new section. ▪ We rearranged the content of the Environmental Accounting Guidelines (2000 Version) so as to present it in more detail.
<p>3. Measuring Cost and Benefit</p>
<p>3.1 Environmental Conservation Cost</p>
<ul style="list-style-type: none"> ▪ We rearranged the content of the Environmental Accounting Guidelines (2000 Version) so as to present it in more detail. ▪ The most significant changes were as follows: <ol style="list-style-type: none"> 1) We disused the benefits standards, using objective standards. 2) We simplified the official names of cost classifications. 3) We revised a section of the costs included in resource recycling cost. 4) We allocated costs in connection with environmental data and costs in connection with nature protection to administration cost and social activity cost in accordance with the objective thereof. 5) We arranged the method of entering of full amounts with special notes (a method of totaling environmental conservation costs), so that they would be included in the allocation total using a simple standard.
<p>3.2 Environmental Conservation Benefit</p>
<ul style="list-style-type: none"> ▪ We rearranged the content of the Environmental Accounting Guidelines (2000 Version) so as to present it in more detail. ▪ The most significant changes were as follows: <ol style="list-style-type: none"> 1) We indicated types of environmental conservation cost and their relationship with business activities. 2) We revised our indicators, using environmental performance indicators. 3) We introduced two methods of calculation which uses a simple comparison with the base period and which adjusts the volume of business activity.
<p>3.3 Economic Benefit Associated with Environmental Conservation Activities</p>
<ul style="list-style-type: none"> ▪ We rearranged the content of the Environmental Accounting Guidelines (2000 Version) so as to present it in more detail. ▪ The most significant changes were as follows: <ol style="list-style-type: none"> 1) We divided economic benefits into actual benefits and estimated benefits depending on the certainty of the basis. 2) We introduced two methods of calculation which uses a simple comparison with the base period and that which adjusts the volume of business activity.
<p>4. Disclosure of Environmental Accounting Information</p>
<p>4.1 Elements of Disclosure for Environmental Accounting</p>
<ul style="list-style-type: none"> ▪ We established this as a new section. ▪ We listed up the items to be entered in order to disclose environmental accounting data through an environmental report.
<p>4.2 Formats for Disclosing Environmental Accounting Data</p>
<ul style="list-style-type: none"> ▪ We revised part of our classifications of environmental conservation costs and environmental conservation benefits in accordance with amendments to the guidelines.